(28,665)

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1921.

No. 710.

BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY, PLAINTIFF IN ERROR,

vs.

PUBLIC SERVICE COMMISSION OF THE STATE OF WEST VIRGINIA ET AL.

IN ERROR TO THE SUPREME COURT OF APPEALS OF THE STATE OF WEST VIRGINIA.

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1 Pleas Before the Supreme Court of Appeals of the State of West Virginia.

At a Regular Term of the Supreme Court of Appeals, continued and held at Charleston, Kanawha County, on Friday, the 30th day of September, 1921, the following order was made and entered, to-wit:

4447.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY, Petitioner,

vs.

PUBLIC SERVICE COMMISSION, Respondent.

This day came the Bluefield Water Works & Improvement Company, by Sanders, Crockett, Fox & Sanders, its attorneys, and tendered and filed its petition for suspension of an order of the Public Service Commission, made and entered on September 7, 1921, in a proceeding before said Commission in which said petitioner was complainant and the City of Bluefield was defendant, and, not desiring to ask for suspension of said order pending the final hearing, praying that the matters arising on said petition be set down for final hearing. Upon consideration whereof, said petition is ordered filed, and the Court doth fix Tuesday, the 1st day of November, 1921, for the final hearing on said petition, and doth order that a copy of this order be forthwith delivered to the Secretary of the Public Service Commission.

The petition aforesaid, and the papers, documents, evidence and records, or certified copies thereof, as certified to this office, are in the words and figures following:

2 In the Supreme Court of Appeals of West Virginia, Charleston.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY, a Corporation, Petitioner,

vs.

CITY OF BLUEFIELD, a Municipal Corporation, Respondent.

In re Application of the Bluefield Water Works & Improvement Company Before the Public Service Commission of West Virginia for a Revaluation of its Plant and Authority to Increase Water Rates. Public Service Commission Case No. 1138.

Petition.

To the Honorable Judges of the Supreme Court of Appeals of West Virginia:

Your petitioner, Bluefield Water Works & Improvement Company, a corporation created and existing under and by virtue of the laws of West Virginia, would respectfully show that it is the applicant and petitioner in the above named cause, and that it is aggrieved by a final order entered in the above entitled cause by the Public Service Commission of West Virginia on the 7th day of September, 1921.

Petitioner would further show that on the 27th day of September, 1920, your petitioner filed its formal petition before the Pub-
3 lic Service Commission of West Virginia asking the Commission to review and set aside its findings in case No. 368 decided April 24, 1917, which fixed the value of petitioner's property used in the public service at $360,000.00, and also requesting such increase in water rates as would produce sufficient revenue to pay operating expenses and taxes, provide for depreciation and afford it a fair return upon the present fair value of its property now used and useful in the service of the public. The petition filed by the applicant alleges that its rates for supplying water to its consumers in the city of Bluefield, as fixed by the former orders of the Commission, are inadequate and insufficient to pay operating expenses and taxes, and the sum necessary to be set aside for depreciation and for return upon the fair value of the property used in the public service, and that the sum of $360,000.00 fixed as the value of the applicant's property by orders made in case No. 368 above mentioned was arbitrary and without evidence to support such finding, and that the sum is grossly less than the present fair value of its property and constituted in effect the taking of the property of the petitioner without due process of law, in violation of the Fourteenth Amendment of the Federal Constitution, and that since the entering of the said order there had been large and valuable additions, betterments and improvements made to the plant of the petitioner. The city of Blue-

field appeared and filed its answer and cross petition denying that the said sum of $360,000.00 as fixed by the Commission did not represent the true and actual value of the plant at the time of the making of the said order, and denying that there had been any additions or improvements made to the plant of the company, and alleging further that the plant and equipment of the said company was inadequate to supply the demands of the city, and praying that the Commission order the making of certain improvements and the adding of certain equipment to the plant of the company. Evidence was taken in support of both the application of petitioner and
4 the answer and cross petition of the respondent, and the case was submitted on the 11th day of July, 1921.

Petitioner would further show that in case No. 368 above referred to petitioner was directed to furnish an inventory of all its property, equipment, and etc. employed by it in the service of the public, and that petitioner in that case employed the services of John W. Alvord, an expert hydraulic and sanitary engineer, who, together with W. E. Miller, another expert employed by the city of Bluefield for the same purpose, proceeded to make, and did make, a complete inventory of petitioner's entire plant. This invoice was adopted by the Commission as correctly setting out the units composing the said plant at the time of the hearing of case No. 368. The applicant at the hearing of the present case No. 1138 filed a supplemental inventory showing the additions and improvements made to the plant of the applicant since the making of the previous inventory, and deducting from the said inventory such elements of the plant and equipment of the applicant as are no longer used and useful in the service of the public. At the direction of the Commission an inventory of the plant of the petitioner was made by W. Q. Gallaher, Chief Engineer of the Public Service Commission, who, after a survey of the plant, adopted the inventory as made by John W. Alvord and the supplemental inventory made by L. R. Howson as correctly setting out the plant used and useful in the service of the public as of January 1st, 1921.

Your petitioner would further show that at the hearing of the said case before the Public Service Commission the following valuations were placed upon the plant of the applicant company.

1. $1,194,363 based upon the reproduction new less depreciation theory of valuation at 1920 prices.

2. $900,000.00 estimated present fair value for rate making purposes.

3. $624,548 present value based on reproduction new less
5 depreciation theory of valuation at pre-war prices.

4. $397,964.39 based on reproduction new less depreciation theory of valuation with 1915 prices as the basis, plus additions to capital made since December 31st, 1915, which includes nothing for going value, water rights, and other intangible elements of value which were properly considered in the other estimates.

5. $460,000.00 fixed by the Commission in its order, which is based upon the original value of $360,000.00 found by the Commission in its former order, plus additions made to the plant subsequent to the former valuation.

Petitioner would further show that on the 7th day of September, 1921, the Commission handed down its opinion in the said cause with the order herein complained of attached wherein said Commission places a value on petitioner's plant for rate making purposes at the sum of $460,000.00; that said valuation is, in fact, based upon the previous finding of the Commission fixing the value of the applicant's plant at $360,000.00, plus $92,520.53 additions to capital made since the former finding of the Commission, which said $92,000.00 includes $25,000.00, the value of the plant of the Bluefield Valley Water Works plus ten per cent for going value which was not allowed by Commission in its former holding.

Your petitioner further represents that the said value so fixed by the Commission does not represent the present actual value of the plant of the applicant used and useful in the service of the public, and that the rates fixed by the Commission based upon the said valuation of $460,000.00 will not produce a fair and adequate return upon the present value of petitioner's plant used and useful in the service of the public.

Your petitioner says that it is aggrieved by the entry of the said order and says that said Commission erred:

6 1. In refusing to overrule, set aside, revise and change its findings as to value of the plant of the applicant company, and in finding the said value of the said plant and property to be $360,000.00, plus additions made since 1915.

2. In placing a value of $460,000.00 upon the plant as the basis upon which to predicate its findings as a fair return to this petitioner, and in disregarding the reports and testimony of the expert witnesses as to the present actual value of the plant and equipment of the company.

3. In taking past cost less depreciation as the basis of determining the value of the plant prior to 1915 and in adding to it the cost of additions since 1915 less depreciation as a method of determining present value.

4. In discarding and refusing to consider the evidence as to the present value of the plant, determined in accordance with present day prices, and in discarding the said testimony and basing all calculations upon past or pre-war costs.

5. In refusing to allow to the petitioner a fair and adequate sum for water rights, overhead expenses, operating capital, cutting through pavements to lay mains, and other items set out in the valuation of the said plant by the witnesses.

6. In using the straight line method of determining depreciation in the face of the evidence that the sinking fund method is the only fair and just method of determining depreciation of a public utility.

7. In ordering the petitioner to make certain additions to its plant, and in failing to provide in the said order for a return upon the additions thus ordered by it, and in directing petitioner to expend large sums in the improvement of its plant when it is disclosed by the opinion of the Commission that the rates allowed petitioner have not afforded a fair return upon the value of its present plant.

8. In holding that the applicant is entitled to a return of
7 only eight per cent upon the value determined by the Commission as the actual value of the plant, and in refusing to increase the rate of return upon the said value to correspond with the shown increase in interest rates and returns upon other investments.

9. Because the Commission by its holding and its said order refused to allow your petitioner a fair and just return upon the value of its plant used and useful in the service of the public, and by its order deprives your petitioner of just compensation and the rates fixed by said Commission in its order are confiscatory and repugnant to Clause 1 of the Fourteenth Amendment of the Constitution of the United States in that the said order deprives your petitioner of its property without due process of law and without just compensation therefor, and denies to your petitioner the equal protection of the law.

10. That the said final order is erroneous in other respects as will appear from the inspection of the record in this case.

A copy of this petition has been served upon the Secretary of the said Commission, as required by Statute.

Your petitioner therefore prays that the order entered herein by the Public Service Commission of West Virginia on the 7th day of September, 1921, as aforesaid, be suspended, and that a time be set for a hearing of this application; that the orders so entered as aforesaid be reviewed, reversed and set aside, and that this Court enter such orders as may be proper in the premises.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY, A CORPORATION,
By COUNSEL.

SANDERS, CROCKETT, FOX & SANDERS.

8 I, A. G. Fox, Attorney-at-law, practicing in the Supreme Court of Appeals of West Virginia, do certify that, in my opinion, the order herein complained of is erroneous and that the same should be suspended, reviewed and reversed.

This the 29th day of September, 1921.

A. G. FOX.

8½ [Endorsed:] Petition. Bluefield Water Works & Improvement Company, Petitioner, vs. City of Bluefield, a Municipal Corporation, Respondent. In re application of the Bluefield Water Works & Improvement Co. for a re-valuation of its plant and authority to increase water rates. Sanders & Crockett, Attorneys at Law, Bluefield, West Virginia.

9 Pleas Before the Supreme Court of Appeals of the State of West Virginia.

At a Regular Term of the Supreme Court of Appeals, continued and held at Charleston, Kanawha County, on Wednesday, the 23rd day of May, 1917, the following order was made and entered, to-wit:

CITY OF BLUEFIELD

VS.

BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY.

This day came the Bluefield Water Works and Improvement Company, by Sanders & Crockett, its attorneys, and presented to the Court a petition praying for the suspension of an order of the Public Service Commission entered on the 24th day of April, 1917, in a case in which the City of Bluefield was complainant and said petitioner was defendant, which petition is ordered filed, and no request for a temporary suspension of the order complained of having been made, it is ordered that this proceeding be set for final hearing on Wednesday, the 5th day of September, 1917.

The petition aforesaid, and the papers, documents evidence and records, or certified copies thereof, as certified to this office, are in the words and figures following:

10 In the Supreme Court of Appeals of West Virginia, Charleston.

CITY OF BLUEFIELD, a Municipal Corporation,

vs.

BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY, a Corporation,

and

In re BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY.

Upon Application for Authority to Increase Rates, Tolls, and Charges for Water Before the Public Service Commission of West Virginia.

Petition.

To the Honorable Judges of the Supreme Court of Appeals of West Virginia:

Your petitioner, Bluefield Water Works and Improvement Company, a corporation created and existing under and by virtue of the laws of the State of West Virginia, would respectfully show that it is the defendant in the first of the above named causes, and that it is the petitioner in the second of the above named causes; that it is aggrieved by a final order entered in the above entitled causes by the Public Service Commission of West Virginia, on the 24th day of April, 1917.

Petitioner would further show that on the 18th day of August, 1914, the City of Bluefield filed a formal complaint against this petitioner, in which it claimed that its citizens, the consumers of water, were aggrieved by reason of the enforcement by petitioner of certain of its rules; that on the 2nd day of September, 1914, petitioner filed its answer to said complaint; that thereafter, to-wit, on the 14th day of April, 1915, petitioner filed its formal petition with the said Public Service Commission of West Virginia,
11 asking for an increase of rates for the furnishing of water to the citizens of Bluefield; that public notice of said application was given by the publication thereof as required by said commission; that said cause was set down for hearing by said commission on the 13th day of May, 1915, and upon said date the City of Bluefield appeared and opposed the increase of rates asked for by petitioner; and that said City of Bluefield and said commission further requested that petitioner produce an inventory of all of its property and equipment used in connection with its water plant, together with the cost of operation, maintenance and income derived therefrom; that on the 22nd day of May, 1915, an order was entered by said commission consolidating the said two causes, and on the 27th day of July, 1916, evidence of witnesses was concluded and

a final hearing was had in said cause, briefs being thereafter filed by counsel for both sides.

Petitioner would further show that upon being directed to furnish an inventory of all of its property, equipment, etc., it employed the services of John W. Alvord, an expert hydraulic and sanitary engineer, who together with W. E. Miller, another expert, employed by the City of Bluefield for the same purpose, proceeded to make and did make a complete inventory of petitioner's entire plant and submitted their reports to said commission; that the lowest valuation of petitioner's plant was made by the said W. E. Miller, employed by the City of Bluefield as aforesaid, who valued said plant, after making all deductions for depreciation, at the sum of $392,-739.00. The said John W. Alvord showing the value of petitioner's plant, according to a report made by him thereon, to be the sum of $540,000.00;

And petitioner would further show that after the introduction of all the other evidence in said cause, H. E. Nease, Chief Statistician of said commission, at the request of said commission examined petitioner's books and furnished to said commission a report thereon showing a total gross investment by said petitioner since its
12 organization, as shown by its books, of the sum of $407,-882.00, and that there had been charged off for depreciation from year to year, as shown by petitioner's books, the sum of $83,-445.00.

The petitioner would further show that on said 24th day of April, 1917, said Commission handed down its opinion in said cause with the order herein complained of attached thereto, wherein said Commission values petitioner's plant for the purpose of making rates at the sum of $360,000.00; said valuation being based upon the book value of your petitioner's plant as shown by the report of the said H. E. Nease, instead of the fair and reasonable value thereof as shown by expert testimony; and said Commission upon said valuation of $360,000.00 fixed the rates for the various kinds of service by the petitioner to its water-takers;

The petitioner is aggrieved by the entry of said order and says that said Commission erred:

1. In adopting the report of the said H. E. Nease, Chief Statistician, as a basis upon which to predicate its finding of a fair return to this petitioner upon the amount invested by it in its business, and in disregarding the reports and testimony of the witnesses Alvord and Miller, with respect to the value of the property so investigated.

2. Because said Commission by its holding and its said order deprives your petitioner of just compensation is confiscatory and repugnant to clause I, of the 14th Amendment to the Constitution of the United States as depriving this petitioner of its property without due process of law and denying to it the equal protection of the law.

3. That said final order is erroneous in other respects, as will appear from an inspection of the record in this case.

13 A copy of this petition has been served upon the Secretary of said Commission, as required by statute.

Your petitioner, therefore, prays that the order entered herein by the Public Service Commission of West Virginia on the 24th day of April, 1917, as aforesaid, be suspended; that a time be set for a hearing of this application; that the order so entered as aforesaid, be reviewed, reversed and set aside, and that this court enter such orders as may be proper in the premises.

Respectfully submitted,

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY, A CORPORATION,

By COUNSEL.

I, Joseph M. Sanders, Attorney at law, practicing in the Supreme Court of Appeals of West Virginia, do certify that in my opinion the order herein above complained of is erroneous and that the same should be suspended, reviewed and reversed.

This 23rd day of April, 1917.

JOSEPH M. SANDERS,

[Endorsed:] In the Supreme Court of Appeals of West Virginia. Charleston, City of Bluefield, a Municipal Corporation, vs. Bluefield Water Works & Imp., Company, a Corporation, etc. Order.

14 No. I.

Before the Public Service Commission of the State of West Virginia.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY, a Corporation.

against

THE CITY OF BLUEFIELD, a Municipal Corporation.

Application for Permission to Change the Rates and Charges Now Existing for Water to the said City of Bluefield and the Citizens and Inhabitants Thereof by the Applicant, The Bluefield Water Works & Improvement Company, under and by Virtue of a Franchise Granted to It by the said City of Bluefield.

To the Honorable Public Service Commission of the State of West Virginia your petitioner respectfully shows:

1. The said city of Bluefield is a municipal corporation, created under and by virtue of the laws of the State of West Virginia.

2. That this petitioner, the Bluefield Water Works & Improvement Company, is a public service corporation, created and organized under and by virtue of the laws of the State of West Virginia, and as such public service corporation has for many years been furnishing and supplying water to the said city of Bluefield, and to the citizens and inhabitants thereof, under and by virtue of a franchise granted to it, the said petitioner, by the said city of Bluefield.

3. That during the whole time that petitioner has been furnishing and supplying to the said city of Bluefield, and the citizens and inhabitants thereof, as aforesaid, under said franchise, the rates and charges for the water so furnished and supplied have been and are now as follows:

15 *Schedule of Rates.*

Dwelling Houses, per Year, Occupied by One Family.

One year for one hydrant or spigot	9.00
Each bath tub	3.00
Each shower bath, not connected with bath tub	3.00
Each water closet, each bowl	3.00
Each urinal	1.50
Each set basin, each	1.50
One set of wash tubs, not exceeding three tubs	5.00
Each additional set of wash tubs	2.00
Each family having separate fixtures will be charged the same as if living in a separate house. If using the same fixtures, each additional family will be charged	9.00

Water rents at the above rates are to be paid strictly in advance. See Rule 22.

Boarding and Lodging Houses, per Year.

For six rooms or less	12.00
Each additional room without spigot	1.00
One room or hall with spigot and washstand	3.00
Each additional room with washstand and spigot	1.50
Water closet, each bowl	7.50
Urinal	3.00
Sink, slop over one	5.00

Water rents at the above rates to be paid strictly in advance. See Rule 22.

Hotels, per Year.

Each room including those occupied by the proprietor, his family and employes	1.00
Water closet, each bowl	7.50
Urinal	3.00
Set basin, each	3.00
Billiard saloon	10.00
Bowling Alley	10.00
Bath tub	5.00
Laundry	15.00
Bakery	15.00
Bar Room	25.00
Hose	10.00

Water rents at the above rates are to be paid strictly in advance. See Rule 22.

16 Fountains.

The following fixtures will be allowed and furnished with water only on metered services:

Sprinkler, or moveable fountain for lawn, or garden, centre fountain, fountain in yard of garden, or garden hydrants, street, window and pave washers.

Livery Stable, per Year.

Fifteen stalls or less, each stall, not exceeding fifteen (15)	2.00
Each stall exceeding 15 and not exceeding 25	1.00
Twenty-five to 40 stalls, each stall, exceeding 25 and not exceeding 40	.75
Over 40 stalls, each stall exceeding 40	.50
Hose for livery stable 15 stalls or less, each stable	10.00
Hose for livery stable 15 to 25 stalls, each stable	15.00
Hose for livery stable 25 to 40 stalls, each stable	20.00
Hose for livery stable over 40 stalls, each stable	25.00
Hacks, each	3.00
Hearse	3.00

Water rents at the above rates are to be paid strictly in advance. See Rule 22.

Printing Offices, per Year.

Printing Office	10.00

Water rents at the above rates are to be paid strictly in advance. See Rule 22.

Restaurant and Eating Houses, per Year.

Restaurant or eating house, without bar attached	12.00
Restaurant or eating house, with bar attached	35.00

Water rents at the above rates are to be paid strictly in advance.

Stores, per Year.

Stores where no liquors are sold	9.00
Stores with license to sell spirit or malt liquors	25.00

Water rents at the above rates are to be paid strictly in advance. See Rule 22.

17 Building Purposes.

Laying brick per 1,000	.15
Masonry, per cubic yard	.06
Water used in the construction of artificial or cement pavements, paid in advance, per sq. yd.	.05
Plastering, per 100 square yards	.30

Or on metered services at 25 cents per 1,000 gallons.

Water for building purposes will be furnished only under special permit. See rules.

Sundries.

Post Office	9.00
Banks	12.00
Butcher Shop	25.00
Bar Room	25.00
Barber Shop	10.00
Billiard Saloon	10.00
Bowling Alley	10.00
Bakery	15.00
Buggy	1.50
Bath tub, public	5.00
Boiler with engine attached, for each horse power	3.00
For each horse power of boiler, above capacity of engine	1.00
Boiler when used without engine, each horse power	2.00
Horse, mule or cow, not belonging to livery stable	2.00
Laundry	15.00
Machine Shop	15.00
Offices with spigot	5.00
Two or more offices using the same spigot, each	2.50
Photograph Gallery	12.00
Theater or public hall	10.00
Work Shop	9.00
Water closet, each bowl, public	7.50
Urinal	3.00
Water closet, private, each bowl	3.00
Wash basin or box not otherwise provided for	3.00
Soda fountain, six months	10.00
Tumble washer	15.00
Tumble washer, continuous, six months	30.00

Water rents at the above rates are to be paid strictly in advance. See Rule 22.

Meter Rates.

All bills for water shall be computed each month, upon the following rates and basis: 25 cents per 1,000 gallons.

All water that passes through the meter will be charged for, whether the water is used or wasted.

A minimum charge per month will be made should the amount of water as registered by the meter and charged for as above, not amount to that sum.

The minimum rate shall start from the date of the contract.

18 Special Rates.

Any private consumer, desiring a lower rate can obtain same by signing a special contract at any one of the following rates:

20c. per 1,000 gallons.....	$6.50	monthly	minimum	rate.
17½c. per 1,000 gallons.....	16.50	"	"	"
15c. per 1,000 gallons.....	50.00	"	"	"
12½c. per 1,000 gallons.....	125.00	"	"	"

Minimum Charges.

For water supplied through a one-half inch meter, per month	.75
For water supplied through a three-fourth inch meter, per month	4.75
For water supplied through a one-inch meter, per month..	6.00
For water supplied through a one and one-half inch meter, per month.....	15.00
For water supplied through a two-inch meter, per month..	35.00
For water supplied through a three-inch meter, per month	85.00
For water supplied through a four-inch meter, per month..	210.00

At least the minimum consumption noted above will be charged notwithstanding a less amount may have been registered by the meter. The fact that the minimum consumption charged has not been used in any month shall not entitle the water taker to any credit for such deficiency in case the minimum is exceeded in the next subsequent month.

Meters will be read near the last of each month and bills presented the first day of the month immediately following month in which the service was rendered, and if not paid within 30 days after the date of same the water will positively be cut off, and interest charged together with the actual cost of cutting the supply off and turning it on again will be made and collected before the water is again turned on.

All Rules and Regulations and parts of Rules and Regulations inconsistent with the provisions of these Rules and Regulations and coming within the perview thereof, are hereby cancelled.

Approved by the Board of Directors, March 25, 1908.

19 4. That during the whole time that this petitioner has been furnishing water to the said city of Bluefield, and the citizens and inhabitants thereof, as aforesaid, that the said rates and charges therefor, as shown in the schedule above, have been the rates and charges for said water, and that said schedule of rates are now the rates and charges for the water being furnished by this petitioner under its franchise as aforesaid.

5. That this petitioner proposes to change the rates and charges for water to be hereafter furnished to the said city of Bluefield, and the citizens and inhabitants thereof, and to fix the rates and charges for said water to be so furnished, as follows:

Schedule of Proposed Rates and Charges.

Domestic rate 50 cents per each 1,000 gallons, with a monthly minimum charge of $1.00; all domestic services to be metered.

Special Rates.

30 cents per 1,000 gallons, monthly minimum charge	7.50
20 cents per 1,000 gallons, monthly minimum charge	16.50
15 cents per 1,000 gallons, monthly minimum charge	50.00
12½ cents per 1,000 gallons, monthly minimum charge	125.00

Monthly Minimum Charge for Meters.

½ Inch Meter	1.00
¾ Inch Meter	4.75
1 Inch Meter	6.00
1½ Inch Meter	15.00
2 Inch Meter	35.00
3 Inch Meter	85.00
4 Inch Meter	210.00

Fire Protection.

Public fire hydrants $40.00 per year, payments to be made quarterly.

Private fire hydrants $40.00 per year, payments to be made quarterly.

Private stand pipes with hose connections $40.00 per year, payable quarterly.

20 Sprinkler Services.

For 1,000 heads or less $100.00 per year, payable quarterly; each additional head 5 cents.

6. That the change in the rates and charges for water to be hereafter furnished to the said city of Bluefield, and the citizens and inhabitants thereof, proposed as aforesaid, are reasonable rates and charges, and the reasons for changing the rates and charges for the supplying of said water as proposed, as aforesaid, are as follows:

(a) That due to topography of the country and the elevation of the said city of Bluefield, the furnishing of water to it, and to the citizens and inhabitants thereof, has always been attended with great difficulty and large expense; that it is not located upon any water course, but that it is located upon the summit between the source of Bluestone River on the west and the source of East River on the east, lying between Stonyridge on the north and East River Mountain on the south; and that the nearest point to a stream of water, or water course, is about three (3) or four (4) miles west to Bluestone River, running through the State of Virginia, where this petitioner

could not enter and procure water, except by private contract. And that as to this stream of water the Norfolk & Western Railway Company has procured and now holds the water right from its source to a point at Bluestone Junction, about twelve (12) miles northwesterly from the said city of Bluefield. And that the point on Bluestone River, mentioned as being about three (3) or four (4) miles from Bluefield, is included within the rights of the Norfolk & Western Railway Company.

(*b*) That this petitioner began the building of its plant about the year 1890. The population of Bluefield in 1890 was 1,775; in 1900 it was 4,644; in 1910 it was 11,188, and is now about 15,000. These figures, except as to the present population, are taken from the United States Census Reports, and that at the time this petitioner began the building of its plant it had purchased, at large expense, certain springs located on the north side of East River Mountain, at a much higher elevation than the said city of Bluefield, thereby enabling it to supply to the then population of the said city of Bluefield, water from the said spring on the East River Mountain, by gravity; but on account of the rapid increase of the population of the said city of Bluefield, that it became necessary for this petitioner, at large and heavy expense, to buy other large springs located in the vicinity of the said city of Bluefield, and to build and establish large and expensive pumping stations, and to construct and extend its water mains, at a large and heavy expense.

21

(*c*) That the present supply of water is scarcely adequate to the demands upon your petitioner in a dry season, and petitioner is already confronted with the necessity of securing, at great cost, an additional supply of water in order to comply with its obligations under its franchise.

(*d*) That your petitioner has now invested in its water plant the sum of approximately $314,000.00, and that during the whole time that it has been operating under its said franchise in furnishing water to the said city of Bluefield, and its inhabitants thereof, as aforesaid, that it has not averaged a net income of as much as three (3%) per cent. on the said capital invested

(*e*) That the rates now charged by petitioner to its patrons at Bluefield are very much lower than the rates charged, and allowed to be charged, by other water companies under conditions where the service is less costly to the water company than is the service rendered by your petitioner to it. It is submitted that no other company is anywhere rendering a similar service at the rates heretofore charged by petitioner, where the conditions of rendering such service are surrounded with the same difficulty as at Bluefield. Your petitioner alleges that water cannot be supplied to the said city of Bluefield and its inhabitants at the rates heretofore charged and now in force, so as to enable the Company to make a reasonable return on the money necessary to be invested.

22 7. Your petitioner therefore prays that it may be permitted to increase its rates, as herein set out, to take effect on the 1st day of July, 1915, that being the beginning of a new quarter, and the fiscal year of your petitioner; and for such other and further relief as to the Commission may seem proper.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY,
By COUNSEL.

——— ———,
——— ———,
Attorneys for Petitioner.

23 Before the Public Service Commission of West Virginia.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY, a Corporation,

vs.

CITY OF BLUEFIELD, a Municipal Corporation.

Application to Change Water Rates.

The City of Bluefield, in resisting the application of the Water Company to increase its water rates, has requested that the books of the Water Company be examined with a view of ascertaining certain matters referred to in the writing making this request and filed with the Commission, and the Water Company joins in the request made by the City of Bluefield, and, in addition to asking that such matter be reported upon desires to have the books of the Company examined with a view of ascertaining the following:

(1) Find out the status of the Company's affairs and all things pertaining thereto, and report as of the 1st day of January, 1915, and show further what has been added to its plant since the 1st day of January, 1915, if anything, and the cost of all additions, improvements and investments in connection with its water plant since the last named date.

(2) The amount paid by the Company for its real estate.

(3) The amount received by the Company for its real estate sold.

(4) The amount of the real estate which the Company has on hands and the actual cost thereof to the Company.

24 (5) The amount of profits, if any, the Company has realized through its real estate investments and what has become of such profits.

(6) The amount of money, if any, realized from the sale of real estate of the Company that went into the water plant of the Company.

(7) The gross receipts of the applicant Water Company from its water plant since its organization.

(8) The gross disbursements for operating expenses of the Water Company since its organization.

(9) The gross dividends paid by the applicant Company since its organization, for what years the dividends were declared and in what amounts each year, if any.

(10) To ascertain the cost of all of the Company's property used in connection with its water plant, which appear upon the Company's books.

(11) Ascertain the cost of all of the property of the Company which does not appear upon the books of the Company, such as voluntary service given by officers of other Companies, proportional service given by officers, attorneys and others connected with the land company, interest lost during construction of the Water Company's works, and like matters which enter into the past cost, but which do not usually appear in the accounting.

(12) Take up the matters year by year, first making a list of all the structures of the Company and the dates of their completion and study the vouchers and private book accounts, so that a complete statement of the amount of money put into the plant each year and the amount of money drawn out in the way of dividends, operating expenses, etc., is made to appear, so that each year may have a statement by itself, so that it may be determined, first, the exact past cost in cash, and, second, the past cost in cash plus all other values put into the plant, either by gift, unpaid services, costs incurred by other companies, deficits in operation below fair return, and like matters carefully taken into consideration in the past cost investigation.

SANDERS & CROCKETT,
Attorneys for Bluefield Water Works & Improvement Company.

Before the Public Service Commission of West Virginia.

BLUEFIELD W. W. & IMP. CO.

VS.

CITY OF BLUEFIELD.

In re Application of BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY to Change Rates.

It is desired by the City of Bluefield which is resisting this application that the books of the applicant be examined, with a view of ascertaining the following:

I. The amount of capital stock of the applicant which has been subscribed, when such subscriptions were made, how much was paid

for such stock and in what manner the payments were made and when.

II. What disposition was made of the capital paid in; that is to say, what did the applicant get for its capital stock, and if money was received for the whole or any part of it, what was done with the money.

III. If the applicant has any real estate now held for its benefit or the benefit of its stockholders by a trustee, the amount thereof and the value thereof, and where situate.

IV. The expenses of the applicant for the last ten years for the operation and maintenance of its water plant, giving in detail what each item of expense was for, to whom paid, and the amount thereof.

V. The amount expended by the applicant for its water plant, giving the items covered by such expenditures, the dates thereof and the amounts thereof.

VI. The amount paid by the applicant in dividends on its capital stock, showing when each dividend was declared and the rate of dividend and amount of each dividend.

27 VII. The amount paid by the applicant for real estate and for buildings which are not and were not purchased for use in furnishing water, when paid; what disposition has been made of such real estate; the amounts received for that part thereof that has been sold and when received.

VIII. The gross receipts of the applicant from its water plant for the last ten years, giving it by years and separating the amount received from public hydrant rentals and that received from private consumers.

IX. What amounts have been paid by the applicant for salaries of officers and clerical or other services and for office expenses at its Philadelphia office during the last ten years, by years; to whom such payments were made and the amounts paid to each party by months or years.

X. The amounts paid by the applicant for salaries of officers, superintendents, foremen, clerks or clerical assistance at its Bluefield plant during the last ten years, by years; the parties to whom such payments were made and the amount annually paid to each of such parties.

HAROLD A. RITZ,
Attorney for City of Bluefield.

27½ BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY

v.

THE CITY OF BLUEFIELD.

TRANSCRIPT OF EVIDENCE.

Charles V. Price, Shorthand Reporter, Welch, W. Va.

28 NOTE.—It is agreed between the parties hereto that the inventory of the property filed with the evidence of this witness, designated on the back thereof "Inventory of the properties of the Bluefield Water Works and Improvement Company, Bluefield, West Virginia, January 1st, 1915," is a correct inventory of the property of the said Bluefield Water Works and Improvement Company used in connection with its water plant, and in connection with furnishing water to the City of Bluefield and the citizens thereof, with the exception that as to the following items there is a difference between the parties as to the quantities thereof, to wit: page 49 of the inventory, cubic yards concrete in spring house; page 50, square yards shingles on spring house, page 50, length of 18-inch tile pipe in spring house; page 61, cubic yards earth excavation in Ada pumping station, building foundation; page 61, cubic yards concrete in foundations of building; page 61, cubic yards concrete in walls; page 62, lumber in roof and ventilator; page 62, wainscoting of engine room; 62, roofing lumber and moulding; page 82, rock excavation for building site, Ada pumping station; page 92, cast iron pipe, tonnage.

29 Before the Public Service Commission of West Virginia.

Bluefield, W. Va., July 24-27, 1916.

No. 368.

BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY, a Corporation, Applicant,

v.

CITY OF BLUEFIELD, a Municipal Corporation, Respondent.

Application of Bluefield Water Works and Improvement Company for Authority to Change Water Rates.

Present: Hon. Elliott Northcott, Commissioner.

Appearances:

For the applicant: Messrs. Sanders & Crockett (Judge Sanders); A. G. Fox, Esq.

For the respondent: Harold A. Ritz, Esq.

30 *Index.*

Witnesses.	Direct.	Cross.	Redirect.	Recross.
For the applicant:				
John W. Alvord	4	67	141	167
William McCarthy	172	220	267	...
" " (recalled)	292	...	...	...
A. L. Rhoads	294	...	...	...
Wm. H. Triol	295	301	...	...
For the respondent:				
Walter E. Miller	313	371	...	...
Rebuttal:				
William McCarthy	397	397	400	...
John W. Alvord	402	...	...	...

31 Before the Public Service Commission of West Virginia.

Bluefield, W. Va., July 24, 1916.

No. 368.

BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY, a Corporation, Applicant.

v.

CITY OF BLUEFIELD, a Municipal Corporation, Respondent.

Application of Bluefield Water Works and Improvement Company for Authority to Change Water Rates.

Be it remembered, that upon a hearing of this cause at the offices of Sanders and Crockett, at Bluefield, West Virginia, before the Public Service Commission of West Virginia, the Bluefield Water Works and Improvement Company, the applicant, to maintain the issue and in support of its application for a change of water rates, introduced before the Commission the following evidence, to wit:

32 JOHN W. ALVORD, a witness introduced on behalf of the applicant, having been first duly sworn by the Commissioner, testified as follows:

Direct examination.

Judge Sanders:

Q. Mr. Alvord, where do you live?
A. I live in Chicago.

Q. And what is your profession?

A. Hydraulic and sanitary engineer.

Q. How long have you been following this profession?

A. About thirty-six years.

Q. And what class of work is included in your work in this profession?

A. Very largely the construction of water works, remodeling of water works, investigations for new supplies, and also drainage and sanitary works, and river regulation, flood protection, and other lines of hydraulic engineer.

Q. I wish you would please state whether, during the time that you have been engaged in following your profession as stated,—that you would tell how extensively you have been engaged in it. Explain fully all of that.

A. Well, I have been employed by something over three hundred cities in various parts of the country to advise them as to their sanitary and hydraulic works—water works and water supplies—and I have been engaged on such works approximately all of my professional life.

33 Q. Has the following of your profession been your principal life work since you entered into it?

A. Yes, sir.

Q. Have you been actually engaged in the laying out or the building of water works—plants?

A. Yes, sir.

Q. Please state what actual experience you have had in regard to this class of work.

A. Well, my earliest work was in connection with the Chicago Water Works. I was engaged in the construction of the—what is now known as the Lakeview station, a tunnel and pumping station producing system for the northern part of the city; and later on I was engaged in the construction of the tunnel and pumping station distribution system of what is known as the Hyde Park district, the southern part of the city. Later on, as independent—In all of this work I was assistant engineer. Later on, as an independent practicing engineer, I had charge of the construction of a good many works, the remodeling of a good many works. I don't suppose I am able to recall them all, but among them are the water works at Gary, Indiana, for the United States Steel Corporation, which involved a tunnel under Lake Michigan and large pumping station; the new works at La Crosse, Wisconsin, which were entirely—almost entirely rebuilt a couple of years ago; the

34 pump rebuilt a couple of years ago; the pumping works and filtration works at Evansville, Indiana, and a great number of smaller works; additions and enlargements to the works of Des Moines, where I have been consulting engineer to the company for some ten years; additions and enlargements to works of Grand Rapids—to the city of Grand Rapids. At the present time I am engaged in building a filter plant at East Chicago, Indiana; another filter plant at Lawrenceville, Indiana; and I have recently completed the new works at Richmond, Indiana—the additional works to the pumping station at Richmond, Indiana; and Burlington,

Iowa, and a good many other places I can't at this moment recite without referring to memoranda.

Q. This is an application made by the Bluefield Water Works and Improvement Company to the Public Service Commission of West Virginia for authority to change its water rates for water furnished to the city and to the inhabitants thereof. I will ask you to state if you have been engaged by the Bluefield Water Works and Improvement Company to value its property and plant used by it in connection with the furnishing of this water.

A. Yes, sir.

Q. Have you made such valuation?

A. Yes, sir.

Q. Upon what did you base your valuation? I mean to say, was that upon an inventory or report of the property used by the water company in connection with its water plant?

35 A. Yes, sir. The inventory was prepared under my direction by one of my assistants, Mr. Luce, which undertook to state the kind and arrangement and a description and life of all the various structures, machines, and pipes, and parts of the property of the Bluefield Water Works and Improvement company.

Q. I have an inventory of the properties of the Bluefield Water Works and Improvement company, or Bluefield, West Virginia, dated January the 1st, 1915, together with certain maps and diagrams of said property, and I will ask you to file this report or inventory with your evidence, marked, "Inventory of the property of the Bluefield Water Works and Improvement company, Bluefield, West Virginia, January 1st, 1915," which appears to be endorsed on the back of said inventory.

A. Yes, sir. I file the said inventory marked as requested.

NOTE.—It is agreed between the parties hereto that the inventory of the property filed with the evidence of this witness, designated on the back thereof "Inventory of the properties of the Bluefield Water Works and Improvement Company, Bluefield, West Virginia, January 1st, 1915," is a correct inventory of the property of the said Bluefield Water Works and Improvement company used in connection with its water plant, and in connection with furnishing water to the City of Bluefield and the citizens thereof, with the exception that as to the following items there is a difference between the parties as to the quantities thereof, to wit: page 49 of the inventory, cubic yards concrete in spring house; page 50,

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NOTE.—The inventory referred to was filed as evidence, marked as requested, and is hereto appended.

Q. You made a report of the valuation of the water works property of the Bluefield Water Works and Improvement company, did you, Mr. Alvord?

A. Yes, sir.

Q. Have you a copy of that report?

A. Yes, sir.

Q. I hand you a report of the values of the property of the Bluefield Water Works and Improvement company, endorsed on the back thereof as follows: "Report upon the value of the water works properties of the Bluefield Water Works and Improvement company, Bluefield, West Virginia, January 1st, 1915," and ask you if that is your report of the values of the property of the Bluefield Water Works and Improvement company, and if so file the same as part of your evidence.

A. It is, and I file the same herewith.

NOTE.—The report referred to was filed as evidence, marked as requested, and is hereto appended.

Q. Are these valuations of the company's property as
37 shown by your report correct valuations of its property?

A. Yes, sir, so far as I know and can determine.

Q. I wish you would please state how you made these valuations and in what way you determined the correctness thereof.

A. Well, perhaps it is not quite proper to say that a valuation is ever correct, because a valuation is a matter of opinion—intelligent opinion—but it can be correct so far as the reasoning which accompanies it is correct; and I think the important part of valuation work is correct reasoning. If you would like to have me explain the reasoning——

Q. Oh, yes.

A. The fundamental reasoning which I would use in valuing this property is that the value must be found as of today, and of the property as a whole, as a going concern, and any evidence which I can get which will show the value today is valuable evidence, and the most valuable evidence which I can get is what it would cost to reproduce the property as of today, under the conditions existing in Bluefield as of today. This line of evidence is useful when four fundamental conditions obtain; first, that the property is needed in its present condition and shape—that there is a need for it: a need
such as would require it to be reproduced if it did not exist;
38 second, that it has been built with intelligence and good engineering—good application to the service in hand; third, that the service is worth to the consumer what it is found necessary to support the value; and fourth, that there has been no dishonesty in connection with the financing or the construction. When all those fundamental conditions are present, I take it that a plant or a property of any kind is worth what it would cost to reproduce it, less any depreciation or lessened value which the existing property has by reason of its age. Acting on this theory, I have estimated, first, what it would cost to reproduce a property precisely similar to this property new, in Bluefield, beginning approximately with the

date of this valuation, laying out a plan by which it could be brought into being in a practicable manner—in a way that would be humanly possible—part by part, structure by structure, so as to get it into use at the earliest possible moment; and I have estimated what it would cost it to finance it into a revenue similar to the revenue now existing, and then I have figured the depreciation, which would reduce the cost of the plant new to the level of the existing property; and this I have done by estimating that part of the depreciation which relates to what might be called its insurance or amortization—that is, a sum which should be set aside to replace each part of the plant when it ceases to be useful—and the present worth of that
39 amount I have taken from the cost new, and find that the present value, as indicated by the cost of reproduction, would be approximately, in round numbers, $540,000.

There are other considerations which should be given attention in making sure that the cost of reproduction is a proper standard to apply to the property. A property in which the population and industry and business was declining would evidently not be worth the cost of reproduction; and a property which, as I have said before, fundamentally is not constructed so as to meet the needs of the community and develop best the adequate supply of those needs, is not always worth the cost of reproduction.

These various phases I have considered, and I have embodied them in my report showing the reasons on which I have concluded that in this case the cost of reproduction less depreciation is about as fair a method of finding the valuation as can be used.

Q. I see from the report of the value of the company's property which has been filed as a part of your evidence that you give certain illustrations and certain reasons for arriving at the valuations that you place upon the company's property. I will ask you to adopt these reasonings and illustrations as a part of your evidence taken in this proceeding.

A. Yes, sir.

Q. And are the reasons that you give and illustrations that you make correct reasons and illustrations for arriving at the val-
40 uations which you arrive at of the cost of the property?

A. I believe them to be, sir; yes, sir.

Q. And that belief is predicated upon your experience that you have had in making estimates of like values?

A. Yes, sir.

Q. In arriving at these values, do you take into consideration the growing needs of the city for water and the opportunities that the company has for furnishing water or the accessibility of water?

A. Not to the extent that I estimate the property is complete, or will be complete, but to the extent of knowing that what has been created is and will be valuable for future needs without material change. There is another phase, of course, answering your question, in which property of this kind is never complete, but you will always have to keep increasing it to meet the future needs of a growing population.

Q. I wish you would please state what will be the necessary out-

lay or expense to be incurred by the company to increase its water supply to meet the growing demands of the city.

A. It is my belief, based on such investigation as I have been able to make, that the company has exhausted all of the available sources of water supply, and that it must proceed to look for supplies
41 much further away and of a different character entirely from those which it has been hitherto relying upon. It is also my belief, from such information as I have had, that the company is already short of water in the dry season, and that such works should be commenced at the earliest possible moment for supplementing its supply. I have investigated three or four, I may say, other possible sources—Perhaps I ought not to say "investigated" them, but I have outlined them, which may be investigated or should be thoroughly investigated to determine their relative merits by which means the company can increase its supply. The city of Bluefield is on a divide, and the nearest available waters must be looked for at considerably less elevation, and mainly, I think, to the west. One of these sources would, in my opinion, be the impounding of the surplus, unappropriated flood waters of the Bluestone river above Graham, Virginia. This would involve going a distance of four to six miles away, building a large reservoir, acquiring land, establishing a filter plant to filter the water so as to bring it up to the purity of the present supply, building a pumping station, laying a sixteen-inch force main by which it could be pumped up into the present supply tanks of the Bluefield water company. The approximate cost of such development, which should be sufficiently large to supply the city for some time to come, which I estimate ought to be in the neighbor-
42 hood of 2,000,000 gallons a day additional supply, would be about $240,000. There are needed more mains throughout the city, in part for fire protection and in part for the extension of the domestic supply. Possibly about $40,000 should be expended inside of the next year or so for these additional mains.

There are other sources of supply which may, on more detailed investigation, prove to be equal or superior in economy to that which I have outlined. One of them relates to the surplus, unappropriated waters of Brush Fork of the Bluestone river, and another one to Mud Fork of Bluestone river; but so far as I have gone the impounded waters on the Bluestone would appear to be the most available.

Q. What did you say would be the cost of acquiring this water for the growing needs of the city, or did you state that?

A. The first cost of installation would be about $240,000 for this new additional supply, and there would be additional operating expenses, depending on the quantity of water used, which would add to the operating expenses, as well.

Q. What do you include in the installation expenses that you refer to?

A. The acquisition of a sufficient amount of land above Graham at a point up there where a dam can be constructed, the con-
43 struction of that dam to hold about 100,000,000 gallons of water, so as to store the surplus waters of the wet season for the

dry season. This is necessary because I understand that other interests have acquired water rights to the normal or dry weather flow of that stream. Then the establishment of a filter plant so as to filter this water so as to make it of equal purity with the present supply or better, and a pumping station which will lift it about 400 feet in height so that it can be delivered through a 16-inch force main some five or six miles long to the present tanks in Bluefield.

Q. Now, what do you include in what you call the operating expenses?

A. The operating expenses of this additional supply would be the maintenance and care of the dam, pumping station, and filter plant, the operation of the filter plant and of the pumping station, coal, oil, and supplies, and the depreciation, maintenance, and repair on all of those additional structures.

Q. Would there be any other expense except what you refer to as the installation expense and operating expense?

A. Not so far as I know, except the annual depreciation, of course, from those additional structures.

Q. Now, how long do you calculate that the expenditure of this sum of money will meet the requirements of the city, or how
44 long will it be after the expenditure of that sum of money until an additional sum would have to be spent, assuming that the city continues its growth in the future as it has in the last ten or fifteen years in the part, proportionately?

A. Well, the city has grown pretty rapidly, and without going into that exactly I should think that such an additional supply would last it perhaps fifteen or twenty years. If it grows more rapidly in the future than it has in the past, why it would be ten or fifteen years to come.

Q. You have familiarized yourself, I believe, Mr. Alvord, with the present water supply, have you?

A. Yes, sir.

Q. Do you know whether or not there is any other available water except water that might be acquired from Bluestone river or New river, or such as might be produced from wells?

A. None that is not polluted. Of course, the East river is to some extent available, but it is a very polluted stream. The Bluestone below Graham is of such quality that it would be undesirable. There is another stream other than those I have mentioned that is reasonably near to Bluefield. There has been some discussion, of course, in Bluefield, about going to New River, but that
45 would be a very tremendous expense, almost beyond the reach of a city like Bluefield.

Q. What is the cause of the pollution of East river and of Bluestone below Graham, Virginia?

A. Well, largely the populations of Bluefield and Graham, which are discharging into the river their sewage, even though to some extent treated, matters which ought not to be in a water supply, unless it is impossible to obtain water of a purer quality. It is not impossible to filter such waters and make them pure, but it is expensive, and requires very constant human vigilance, and should not

be done if waters of a greater natural purity, but perhaps undesirable from mud and sediment of other matters, can be obtained, which, although they have to be filtered, don't carry the possibility of bacterial infection.

Q. It is a fact that the sewage from Bluefield west of the summit and the sewage from Graham empties into Bluestone river?

A. Yes, sir.

Q. And the sewage from Bluefield east of the summit empties into East River?

A. Yes, sir, that is my belief now.

Q. The summit, of course, as we all know in the city of Bluefield, is the divide between the headwaters of Bluestone and the headwaters of East river?

A. Yes, sir.

46 Q. In speaking of acquiring water from Bluestone river, of course you don't know whether the right to acquire water from that stream could be obtained, or not?

A. Well, I have no reason to believe that the right to the unappropriated flood waters could not be obtained. I am informed and believe that the right to the ordinary flow could not be obtained.

Q. It is your information that that right has already been acquired by the Norfolk and Western Railway company?

A. Yes, sir.

Q. You know of no other springs except those which have been acquired by the Bluefield Water Works and Improvement company that could be acquired for the purposes of furnishing water to the city, do you?

A. I personally do not, although I would say that if there were springs, as probably there are, along East River Mountain further away than those which the company now have acquired, they would not be particularly valuable, because the cost of collecting and impounding them and bringing them to the city would be greater than the cost of some such method as I have outlined.

Q. What would be the cost of bringing water, or an additional supply of water to meet the demands of the city, from New River?

A. I have not made a calculation as to that, but to the
47 best of my recollection it is not less than twenty miles, and I would hazard a guess it would run considerably over six or seven hundred thousand dollars. The operating expenses would also be very great, because the lift would be very large.

Q. Are you acquainted with the values of the materials used by the company in the construction of its plant and the operation thereof as shown by the inventory of the company's property?

A. Yes, sir.

Q. Has your valuation of its property been predicated upon a correct valuation of the materials that entered into the construction and operation of its plant?

A. So far as I am able to believe, yes, sir.

Q. Have you made diligent investigation and research to ascertain these facts?

A. Yes, sir.

Q. I hand you another report, Mr. Alvord, marked for identification, "Preliminary estimates for water supply, Bluefield, West Virginia, as bearing on the value of water from the springs of the Bluefield Water Works and Improvement company, dated February, 1916," signed, "John W. Alvord," and ask you to state whether or not you made this report.

A. I did.

Q. Is this report a correct report of what it purports to be?

A. I believe it to be.

Q. Please file the same as a part of your evidence.

A. I do.

48 Said paper was filed as evidence, marked as requested, and is hereto appended.

Q. Also I have another report, marked for identification, "Report to the Bluefield Water Works and Improvement company on division of investment between fire protection and domestic supply, by John W. Alford, consulting engineer, Chicago," and signed by John W. Alvord. I will ask you if you made this report.

A. I did.

Q. Is it a correct report of what it purports to be?

A. I believe it to be.

Q. Please file the same as a part of your evidence.

A. I do.

NOTE.—Said report as filed, marked as requested, and is hereto appended.

Q. Also I have another report, marked for identification, "Discussion of differences in estimates of John W. Alvord and Mr. Miller in the cost of reproducing the property of the Bluefield Water Works and Improvement company, Bluefield, West Virginia, July, 1916," and ask you who made this report, or prepared this paper.

A. I did.

Q. Is it a correct report or presentation of the matters which it purports to report and present?

A. I believe it to be.

Q. Will you file the same as a part of your evidence?

A. I do.

49 NOTE.—Said paper was filed as evidence, marked as stated, and is hereto appended.

Q. In this report last introduced and made a part of your evidence, which is a discussion of the differences in estimates between you and Mr. Miller, I see that the first item thereon is referred to as preliminary cost. The reproduction cost is fixed by you at $14,455, by Mr. Miller at $1,000; and that the net physical value is fixed by you at $14,455, and by Mr. Miller at $1,000. I will ask you to explain how you arrived at the values placed thereon by you, and give us an explanation as to the differences between you as to these values.

A. This item, item No. 1, is what is known as the preliminary cost in the reproduction estimate; and in the plan of operation under which we are proceeding to reproduce this property, it involves all of the costs which would be incurred up to the development of a precise plan of operation and the granting of the franchise. In other words, the company would have to know just exactly what it could offer the city in the way of a water supply and in the way of financial resources before it could negotiate the franchise upon which it could proceed to build, and the cost is made to cover the business investigations and negotiations, all of the expert preliminary engineering reports which would determine what and where the water supply could be obtained, legal advice, special ex-
50 penses for testing the water sources, the optioning of real estate, organization of the company, the acquisition of franchise, which would have to be a matter of considerable negotiation doubtless with the company, and in general all those costs up to the time when the franchise is granted and accepted, after which there could be no question but what the company could know just how to go ahead and build. Mr. Miller has placed the cost of all that at $1,000——

Commissioner Northcott:

Q. Mr. Miller, the engineer for the city?
A. Yes, sir.
Q. Identify him.
A. Mr. Miller, who has made estimates herein of the cost of reproduction for the city of Bluefield, has placed this cost at $1,000. I have placed it at $14,455, which is three per cent of the cost of the physical property involved in this reproduction. That three per cent is based upon, first, an investigation in my own office of some eighteen cases where water works have been projected and built, and in which we could go back easily to our records and find the cost of engineering investigations for source of supply and outline of project. Those eighteen investigations averaged one per cent of the physical value of the property as finally built. Another one per cent, from information from various sources, has seemed to me to be the desirable amount to put in for the legal expenses,
51 which involved the negotiation of the franchise and the arrangement of the company's procedure, and the necessary advice as to various contracts for financial operation, and as to the organization of the company; and another one per cent seems to me to be necessary here in this case to take care of the general organization of the company, compensation of its officers up to the time when franchise is granted, their traveling expenses, and their negotiations, and their various expenses for clerical hire and for bookkeeping which would be involved, and their various expenses in connection with obtaining the necessary financial support for the proposed project. I feel that in this case $14,000 would be quite conservative. In fact, I am inclined to believe that the engineering investigations for a town like Bluefield—and it must be borne in

mind that this is now the investigations for a plant the size of the present plant; not the original plant—I feel that those engineering investigations probably would exceed one per cent in this case, owing to the extreme difficulty of determining which of the various sources of supply should be developed, together with the difficulty of determining how to develop sources which they already have acquired.

Judge Sanders:

Q. You have referred to Mr. Miller. Is this Mr. W. E. Miller, who has made a report of the valuation of the property of the Bluefield Water Works and Improvement company to be
52 used in this proceeding?

A. Yes, sir.

Q. Have you seen a copy of that report?

A. Yes, sir, and have a copy; and this comparison which I have made here is based on an analysis of the various figures used by Mr. Miller and then used by myself for the same items.

Q. Now, Mr. Alvord, you have gone on and give- an explanation or a comparison in values as to item 1, designated "preliminary cost," as shown on the report or discussion of differences in estimates made by yours and Mr. W. E. Miller. I will ask you now to take that report or discussion, filed with your evidence, and take up each item and give us your reasons for the valuations placed by you on the company's property and compare the differences in valuations made by you and Mr. Miller, without my asking you a question in regard to each item.

A. Item No. 2 is the real estate. Mr. Miller's net physical value is $36,575, and my value is $17,860, Mr. Miller being about seventeen thousand—about twice as great as mine. The value which I adopted for the real estate was that given me by two real estate men in Bluefield, Messrs. Donahue and Easley, who are well known here, I understand, and who reported to me the value of the lands exclusive of the improvements and of the water rights. Mr. Miller's report doesn't show how he arrived at these land values, but
53 his estimates on the cost of reproduction include the improvements on the Bailey and Ruble farms, which I have estimated to be worth $4,000. I am unable, then, to explain why he has so much greater value on this except possibly there is included in his values water rights, which he has not separated from the value of the land.

The item No. 2-B, rights of way: my value is twice what Mr. Miller's is; his value is $2,500 net; my value is $5,100. In this case I have taken the actual costs to the company, plus an allowance of $2,800 to cover the construction of the spring pipe lines, concrete houses, water troughs built by former owners of the spring tracts as a consideration for permission to build pipe lines. Mr. Miller's estimate does not show how his estimates were made.

Item No. 2-C, building and improvements, Mr. Miller puts at $5,163; I have taken them at $11,002. The principal difference in this item results from the fact that Mr. Miller includes the im-

provements on the Bailey and Ruble farms with his lands estimates, which I have estimated these separately. Mr. Miller has estimated the cost new of the office building at $4,500, and has depreciated it the amount of 45 per cent. I have taken the present worth at $4,500, and that of the garage separately at $300.

Judge Ritz:

Q. Mr. Alvord, you say it is depreciated 45 per cent. I just want to call your attention to the fact that it is depreciated $45,
54 1 per cent.

A. That is a misprint here in this report then, that you will kindly correct in your copy. It is depreciated $45, then.

Item No. 3, the gravity springs. My estimate, $13,886; Mr. Miller's, $9,142. The differences result from differences in unit prices, which are shown in the following comparison. All of this work is up on the mountain, in an inaccessible location, very difficult to get to, and I have put larger unit prices on it than would be normally the case for work around or in the city. A great deal of material—in fact, all of the material—had to be carried in. The sites, I was informed—and the inventory states—were full of rock and brush and logs, and had to be cleared at great expense; and our differences apparently result from the fact that I have put on in a good many cases a good deal higher unit prices for those works, owing to that unusual difficulty.

I have placed also a value of $40,000 on the water rights of the group of gravity springs. The group of gravity springs are those which are directly connected into the Bland street tank, and are on East River Mountain immediately south of this city. I do not find that Mr. Miller has placed any separate values on the water rights to these springs, unless it possibly appears in his real estate values, to some extent. I arrived at that value of $40,000
55 through a careful analysis, which is made in this special report already filed, entitled, "Preliminary estimates for water supply for Bluefield, West Virginia, as bearing on the value of water from the springs of the Bluefield Water Works and Improvement company. A spring which flows pure water at a sufficient elevation and sufficiently near the city of Bluefield undoubtedly has a special and unusual kind of value, and it becomes an interesting question as to how to measure that value in money. I have adopted the theory that it is worth to the city what it will cost to develop water of equal purity and equal quantity delivered into the same tank which the spring is delivered into by the next nearest available source. I have given the same attention to the Ada springs, but as those springs have to be pumped, obviously that group is not worth as much as those springs that flow by gravity. I find that the next nearest available source of water, which I have indicated in this report, in my opinion, based on such investigation as I have made, in an approximate manner, is from the Bluestone river, and that it would cost more per million gallons delivered into the tank to develop water from the Bluestone river than it now costs the company to bring in the springs by gravity from the East River Mountain

and by pumping from the Ada group of springs. I have therefore taken this difference, which is about $12 a million gallons,
56 applied it to the present consumption of the company, assumed a useful life of the springs of not more than 40 years, due to the fact that I think in time they will dry up with the deforestation of the mountain, possibly become one by one polluted from the population or the farming of the upper slop-s, and become dryer, particular- in dry weather, when they are most needed. I consequently assume that they would have an average useful life of 40 years; and I have taken the present worth of the saving which they effect for that 40 years and reduced it to its present worth, and bring it to $47,520, approximately to $50,000 in round numbers. I then apportion that saving between the Ada group of springs and the gravity group of springs, by estimating the cost of pumping the Ada group as against the cost of leading the water in by gravity; and the reasoning, which is all included in this report, appears to show me that the gravity springs, of that $50,000 in round numbers, would be worth about $40,000 extra for water rights, while the Ada group of springs would be worth only about $10,000 of the total.

I have further, as a matter perhaps more of local interest, attempted to divide this increased value of water rights among the different springs in proportion to their distance from the Bland street tank, their elevation above it, and the amount of the flow
57 which each one has, and the results of this apportionment show on page 12 of this special report; but we are chiefly concerned here and now with the excess amount which such springs are worth over and above the mere land as farming land and the improvements which the company have put on them to develop them and conduct their water, but as specially valuable sources of supply; and I know of no other way to figure it out than to measure that in terms of the cost of the next nearest available supply.

So far as my information goes, the people here in Bluefield have very extravagant notions as to the value of those springs, and it is possible that the company have, in some cases, paid more than they ought theoretically to have paid for some springs on that account. My investigation seems to disclose the fact that no more springs ought to be bought at an excessive price, because the cost of going to other sources would limit the amount that could profitably be paid for springs of that kind; but that they could afford to pay, even if they had to go to other sources, the amount of $50,000 in round numbers for the springs which they now own, some of which are shown by the detailed apportionments as worth a great deal, and others as worth very little; but taking them by and large as a group I have put on them that special value over and above the value of the land, and over and above the value of the improvements.

58 Ada Springs, item No. 4—that is, the development of the springs, spring houses, pipes, drainage tile, and all of the improvements which the company has put in, Mr. Miller has taken at thirteen thousand, I have taken at eighteen thousand plus. The differences in these are generally in the unit prices which I have used, which in many cases are larger than Mr. Miller, due to my

feeling that this work is a long way from the city and in a mountainous and hilly country, not easily traversed, and that it is very difficult of access, and that those facts inevitably increase the cost of a lot of detail work such as this involves. The water rights on the Ada springs as apportioned here is found to be $7,683 on the Ada spring itself, and Mr. Miller places no value especially for water rights.

Item No. 5, the Jarrell spring, No. 19: no allowance has been placed by either myself or Mr. Miller on that piece of property other than its value as a farm, my theory being that it would cost more to develop that water than it would to go to a source of supply which would be abundant, and would not justify the construction.

Commissioner Northcott:

Q. That spring is not now in use by the company?
A. No, sir, it is undeveloped.
Q. Then why should it have any value, if the purchase was a piece of bad judgment, and it is not in use for this public service?

59 Judge Sanders: They don't give it any.

A. This is real estate value.

Commissioner Northcott:

Q. But this is not a real estate company; this is a water company?
A. Yes, sir.
Q. Should that have any place in this valuation if it is not in use for this particular public service for furnishing water?
A. You have there a condition which you often find. Undoubtedly when the company bought that spring they thought it was necessary and useful.
Q. I am asking your opinion as to whether it was necessary and useful, and if not whether it should be included in this valuation.
A. Well, based upon my investigation, I believe it is not useful or necessary for the company to own that spring.
Q. Then do you think it should have any place in this valuation, as an expert on these questions?
A. I have given it no value.
Q. None whatever?
A. Unless the real estate is valued merely as land.
Q. That is what I am talking about. This is not a land company.
A. No, but the company didn't buy this for real estate; they bought it for water rights.
Q. Well, if it was injudiciously purchased, should it be valued, in your opinion?

A. I don't think you can call a company injudicious
60 which goes in good faith, on the theory that they have always gone, to buy the next available spring, in good faith—I don't believe that is injudicious. It may be that later events show that it wasn't the best judgment that they could have used, but we are

not to condemn them because our hind-sight is better than their foresight. I believe they should have a reasonable time to dispose of that property; and if I am right it should not form a part of the future water supply. It may be that circumstances may arise by which its value may prove to be more than I now think it is. I have had such cases arise, in which they later become useful. It lies in that borderland of judgment in which it is rather improper to be too severe, because the judge may be as much in error as the company.

Q. I understand you to state from your investigations you are of the opinion that it is not useful for the purpose of furnishing water to the city of Bluefield?

A. That would be my present attitude.

Q. Now, I am just simply asking you whether, in your opinion, or not, you think it ought to be included at any value in this inventory.

A. I think the real estate ought to be included at the value as mere land, but I think no special value should be put on the water right. They have paid for a water right. I am deducting that from it.

61 Commissioner Northcott: That is all.

A. (Continuing:) The Beaver Pond spring, there is no very serious difference between Mr. Miller and myself. We practically agree on the cost of reproduction. But the water rights, there, of course, the same difference occurs. My water right on that spring would be $2,317; Mr. Miller places no water right on it.

Item No. 7, reservoir and dam, Mr. Miller has placed a value on the dam. I have placed none. This dam, I may explain, is a reservoir just below the Ada spring into which it was planned to impound the waters of the Ada spring in wet weather and hold them so that they could be utilized in dry weather and pumped from the Ada pumping station. My recollection is that the city objected to the use of that reservoir because they thought the waters would become staled and possibly contaminated by standing so long, and the company conceded the matter, or it was adjusted in some way—I don't know the exact details—so that the reservoir was not used. That would not be my objection to placing a value on it, because I think in theory the question of impounding Ada springs is probably a correct one, especially if it should be accompanied by filtration, which might readily be done. My feeling about it is that the time has now come when this piece-meal addition to the plant had better stop, and we had better go to some abundant source of supply

62 which can be developed as a whole, which will provide for the future growth of the next ten or fifteen years of the city, with every assurance of success and with every assurance of an abundant supply; and I believe, as far as I can see into the project now, that that can be done more cheaply as a whole than by reaching out piece-meal to add to the supplies by this impounding which is here proposed, or by adding to the property such properties as the Jarrell spring, consequently I have given this no value, when Mr. Miller has put a value of $4,000.

Judge Ritz: But Mr. Miller reports that it depreciated 100 per cent.

The Witness: Oh, I didn't notice that. Probably Mr. Miller is more correct than I am. I should have placed some value on it and then shown depreciation of 100 per cent on it.

Mr. Walter E. Miller: There was an investment there.

The Witness: Yes, there was an investment there.

Commissioner Northcott: Let me get your ideas, gentlemen, on that. Because there was an investment there, and the investment turned out a bad one, do you consider it proper to show that and then show a depreciation of 100 per cent?

A. I think we should produce the property necessary for water supply purposes. This was supposed to be when it was built.

63 Q. Do you take the stand that in spite of all questions of judgment—if, for instance, this company should go out here where there was no spring and no river and build a dam that was useless and needless, there is an investment there. Do you take the position that the good judgment of the investment is not to be considered then?

A. No, sir. Just as soon as I can discern evidence——

Q. I am not talking about evidence of good faith; evidence of good judgment.

A. That is what I am talking about. Just as soon as I can find evidence that the judgment was not good, from my standpoint, and that the structure, or whatever it was, is not needed and in my belief never will be needed, then while I might recognize the investment by estimating the cost of reproduction, I would feel bound to depreciate it 100 per cent. This is a little different from that Jarrell spring, because at the Jarrell spring there has land been purchased. It has a permanent value, which can be disposed of.

Q. Pending its disposition, you think a water rate should be paid on its value?

A. No, I don't think so.

Q. Don't you say that in your inventory?

A. Possibly I do; but I don't believe, if you are going to be as strict as that, that you should throw the land out at once, until

64 it is fully demonstrated that it never will be used. I don't say that the Jarrell spring will never be used. It may be; I may be wrong.

Q. But you give it as your opinion that it should never be used?

A. As I see it now, it would be cheaper to develop water in some other way.

Item No. 8, pipe line from gravity springs to the city, differences of some $7,000 between us, in favor—I am some $7,000 higher than Mr. Miller; and this occurs, I think, largely in our unit prices. I have taken the view that this pipe line was not very accessible; it was in a valley which was very difficult of access, and a long ways from the city; and I have raised unit prices over those normally prevailing for such work in and about where it is normally done due to that fact.

Commissioner Northcott:

Q. Is there any difference there as to the unit price of the pipe—the cost of the pipe?

A. No, mostly in the hauling and laying. I think there is no difference in the price of the pipe at all.

Item No. 9, pipe line from Ada springs to the city, is in the same category; my estimate is fifty-three thousand; Mr. Miller's $47,000 plus.

Mr. Walter E. Miller: May I interject a remark here?

The Witness: Yes.

65 Mr. Miller: I have an addition to make to that item, having omitted the lead and yarn for the joints for that line, amounting to $2,808. A similar objection applies to the pipe line for the Beaver Pond spring, where I omitted the lead.

Judge Sanders: Do you remember the amount of that?

A. $277. No. 10 stands in the same category; the difference is less than here shown, in the light of Mr. Miller's addition.

Item No. 11, the Ada station building. I think our differences here are in the same category; my estimate on that station is $14,000; Mr. Miller's is $11,593. It is largely due, I think, to the fact that I have raised the normal cost of the unit price for such work, such as would be found in the city here, due to the inaccessible and difficult location in which this station is placed. It is some miles from town, down in a deep valley, quite difficult to get material there, to utilize it; and on the page here I have gone through with various differences in the unit prices, showing what they consist of in detail, but I think, in a general way, that is probably the reason for our main difference.

Steel stack, we are not so far apart on.

The coal chute, a small matter, my price is a little higher than Mr. Miller's, due, in general, I think, to the location, the difficulty of access.

66 The oil house is a small matter, mine a little above Mr. Miller's.

Q. Is that another item?

A. Item 14.

Q. Just refer to them so they may appear in the evidence there.

A. On the oil house my unit prices are larger than Mr. Miller's, for the reason I stated as to items preceding; and another reason occurs here, as well—without meaning to be critical. In very small structures, involving a small amount of materials, we always find the unit price runs up higher than it does in large structures, involving large amounts of materials; and I think perhaps I have made more allowance in that respect than Mr. Miller has made.

Item No. 15, the Worthington pump. Apparently Mr. Miller is higher than I am. No large items.

Item No. 16, the Snow pump, my value is less than Mr. Miller's. I think I had access to the cost of this engine, and was guided largely by that.

Commissioner Northcott:

Q. First cost, or present cost?

A. First cost. That station was only built about ten years ago. On the auxiliaries we practically agree.

On the boiler plant, my figures are a little higher than he
67 has, due, I think, largely to the same different view of the inaccessibility of the situation out there.

Item No. 19, piping in the Ada station, there is not a very great disagreement, my item a little higher than Mr. Miller's.

Item No. 20, the same, detailed analyses accompanying all of these.

Item No. 21, concrete retaining wall. My item here is a little larger than Mr. Miller's for the general reasons I have heretofore stated.

Item No. 22, station yard improvements. Here we seem to have disagreed on quantities. Mr. Miller's quantity on the solid rock on the side hill slopes is 500 yards, and my quantity, from the inventory, is 1,000 yards. The rock quantities shown by the inventory were carefully figured from the probable natural slopes of the rock as we were informed it existed prior to the construction of the station. Mr. Miller's price on excavating this rock was $1.50, while I have used $3. The stratifications here are inclined, and hard to blast, and the site is inacessible, and I am frank to say it is hard to believe how much rock has come out of a cut like that, where you haven't got a survey of the original conditions, and you have to rely on statements of those who remember.

Item No. 23, station miscellaneous. Mr. Miller seems to have depreciated his estimate more heavily than I have done.

68 Item No. 24, Beaver Pond station, Mr. Miller seems to have set less value on that and depreciated it much more heavily than I have done. I feel that as an emergency in time of drought that station is still very valuable, and will be for some time to come, to the company.

Item No. 25, steel stack, there is the same difference between us. Mr. Miller is more heavily depreciated than I am.

Item No. 26, the Worthington pump, we are not so very far apart on.

Item No. 27, Mr. Miller is a little higher than I am. It is not a large item.

The boiler plant Mr. Miller has depreciated very heavily. The same reasoning applies that I have stated before, that he seems to have considered this station as early going out of use, while I have thought it was going to be continually needed for some time, in times of drought particularly.

Item No. 29, piping, we are not so very far apart on. It is a small item.

Item No. 30, we are practically in agreement.

Item No. 31, a very small item, the amount of difference not worth speaking about.

Item No. 32, cast iron street mains. They are a very large item,

and we are practically in agreement on it, $43,254, my value,
69 $42,672, Mr. Miller's value. I call that practical agreement.

Commissioner Northcott:

Q. There is some difference there as to quantity that may account for part of that difference, isn't there?

A. There may be.

Judge Ritz: Not that item. That was another item.

A. Item No. 33, cast iron specials on mains, we are practically in agreement on, although I am a little shade over Mr. Miller.

Item No. 34, laying cast iron street mains, Mr. Miller's net is nineteen thousand plus, mine is fifteen thousand plus—No, just the reverse! My value, nineteen thousand plus; Mr. Miller's, fifteen thousand plus. That arises from a little difference in the use of unit prices which are given here. Now, I think that the difference between us is likely to be found in the fact that Mr. Miller is adhering perhaps more closely to the accurate prices paid by the company for piece meal work that they do around town. At any rate, whatever may have been in his mind, in my mind is this condition, that I am reproducing this property as a whole, doing it all at once, in the shortest possible time, under conditions which call for a somewhat higher cost than would be otherwise the case. The company extended it piece meal.

Commissioner Northcott:

Q. Do you think, Mr. Alvord, a job done piece meal can be done more cheaply than as a whole?

70 A. In water pipe extension, yes; because when it is done piece-meal it is done under the superintendence of the superintendent, who is already drawing a salary, and the overheads are absorbed in operating expenses and it can be done by men familiar with the locality, because they work year in and year out; and I think you can do pipe work cheaper by piece-meal than you could lay a whole distribution system at one contract.

Galvanized iron street mains, item No. 35, Mr. Alvord, $5,600 plus, Mr. Miller thirty-seven hundred plus. Some difference, accounted for, I think, in the same way—laying the cast iron mains.

Judge Ritz:

Q. Is that the pipe itself in that item, or is that the laying of it, that 35?

A. That is the pipe itself. I beg your pardon. I was thinking that was the laying.

Judge Sanders:

Q. Well, now, how do you account for that difference, then? Of course, there would be a different explanation of that?

A. Yes. Mr. Miller made an allowance for fittings of five per cent, amounting to $277. My unit prices are made on prices com-

monly prevailing prior to the outbreak of the European war. These prices are now fifty per cent higher. Quotations for July 1st, 1915, are given here, upon which I base my prices. I don't quite see where the difference could have come in that case, because I
71 don't know what quotations Mr. Miller may have had.

Item No. 36 is laying galvanized street mains, and here the difference, which is still great—my estimate about double Mr. Miller's—is, I think, accounted for by my feeling that the entire work would cost more than piece meal construction.

Item No. 37, extra for unusual excavation. My item, $10,000, his, five thousand plus, apparently differ because of my taking the hazards and the obstacles at the higher unit prices. I have taken rock excavation at $2.50 a yard; Mr. Miller has used $3 a yard; for shale Mr. Miller has used 25 cents a yard; I have used a dollar a yard. These result in the main differences between us. My estimates for shale excavation are based largely on the actual cost to the company in removing this class of materials from the trench.

Item No. 38, steam railway crossing, practical agreement.

Item No. 39, street railway crossing. Not a large item. My estimate is somewhat higher, and my unit prices are higher. B, street railway crossings, is a small item. I am slightly above Mr. Miller.

Item No. 40, cutting pavement over mains. Here is a very large item, one in which there is a radical difference of opinion. I am unable to conceive how this property could be reproduced without meeting all of the obstacles which exist in Bluefield today to its
72 building. Those obstacles are very many, and very various. They consist of increased number of pipes of other companies, increased traffic and police regulations, street crossings, increased railroad service, poles for different purposes, and a great many things that did not exist when this company first built—was first built. Now, the very object of the reproduction method, as I conceive it, is to show all of the appreciations which have occurred to the property by reason of the obstacles which would now exist to its reproduction. Of course, if we take into account depreciations, we must take into account appreciations. If there is any single appreciation which we neglect, then we vitiate our reasoning, and should count it with a similar reduction of depreciation. Therefore I conceive it, if this property is worth today what it would cost to rebuild it, it would be worth what it would cost to rebuild it under all the conditions as they exist today, and it would be an engineering impossibility to rebuild it without cutting through the pavements.

Q. What would be the cost of cutting through the pavements?

A. On this particular item, $7,744, my estimate; Mr. Miller's item, historic cost of what pavements were actually cut in the past, $233.

Q. That is a correct estimate of it, is it?

A. You mean my estimate?

Q. Yes, sir.

A. Yes, sir.

73 Item No. 41, valves on main, practical agreement.

Item No. 42, valve boxes on main, very nearly an agreement.

Item No. 43, fire hydrants, very nearly an agreement.

Item No. 44, services, unusual excavation and cutting pavements over services, a very large item, and a large difference; my item, $22,000 plus; Mr. Miller's, $2,000 plus. The same reason applies here that has been stated in connection with the paving over the mains.

Item No. 45, meters in service, Mr. Miller's is about 10 per cent higher than I am.

Item No. 46, meter boxes in vaults, I am about 10 per cent higher than Mr. Miller. Unit prices seem to have been taken by him. My price seems to have been based on the cost of those boxes to the company in the past few years.

Item No. 47, the twin tanks——

Mr. Miller: Isn't that difference about twenty per cent?

The Witness: Well, it is more than 10. Mr. Miller is $5,500; I am $6,800.

Judge Sanders:

Q. That is on the physical value?

A. That is on the net.

Q. Yes, net physical value. On reproduction you are a little further apart?

A. Yes, further than that.

Q. Did you give an explanation of the difference in that item?

74 A. I have taken a higher unit cost, in the first place, based on the average cost to the company; and in all probability I have depreciated mine a trifle more than Mr. Miller has.

Item 47, the twin tanks, fairly large item, and pretty fair agreement on it, Mr. Miller being a little higher than I am, $29,000 plus against my $27,000 plus.

Item 48, the Bland street tank, Mr. Miller's net result considerably higher than mine, my estimate net $2,410 against his $6,211. There is not a very great difference between us on the reproduction cost; all the disagreement seems to be in the depreciation, and that, of course—as we have used the same methods of depreciation—that involves a difference of opinion between us as to the future life of that plant. I don't know, of course, what was in Mr. Miller's mind, but in my mind, when we introduce new and additional supplies that tank will probably lose its usefulness and we will use the twin tanks to a much greater extent than the Bland street tank.

Item No. 49, electric transmission line. Mr. Miller net $330; I am net $621. I think it is possible that Mr. Miller has neglected the labor on this, and has taken the material only, although that is mere surmise. Mr. Miller has depreciated heavier than I have, at all events.

Items No. 50, 51, and 52, being laboratory equipment, furnishings, auxiliaries, and tools. The totals of these, my estimate,
75 $9,450; Mr. Miller's estimate, $7,560. That involves a very large number of small things; I don't know that it is very remarkable that we should not get nearer together on it.

Item No. 53, engineering and superintending, a large item, and there is some considerable disagreement. Both estimates are taken at five per cent, which is the same basis, but, of course, Mr. Miller's total physical property being less than mine, my 5 per cent amounts to more than his, and apparently he has depreciated his to a greater extent than I have mine, his net $13,600 against my net $20,500.

Item No. 54, administrative and legal costs during construction. My percentage is two per cent and Mr. Miller's is 1½ per cent; and it makes our net differ by $8,000 for my estimate and $5,000 plus for his estimate.

Item No. 55, general contingent costs. These are the things which will be unforeseen in a rebuilding. It is to be remembered that they couldn't build any property twice over again without having a different set of contingencies, and it is customary for engineers on new work to add a very large amount for this, often as much as 10 per cent. In view of the fact that we have such a definite description of the work to be rebuilt as we have in the complete specification before us, I have reduced this to 4 per cent, which would make, on
76 my physical units, $17,900, and Mr. Miller has taken 2 per cent on his physical property, at $5,886, and depreciating that would make mine $16,400 and Mr. Miller's $5,400.

Item No. 56, interest during construction. Here Mr. Miller is a little higher than I am. His interest runs $17,000 plus; mine $15,000 plus.

Item No. 57, I am very happy to say, we are in very substantial agreement, an item which is usually one of very wide difference of opinion. We both arrive at the conclusion that it is $16,000. It must be understood, however, that the revenue here is, in my opinion, far too small; the going value being based largely on the reproduction of the revenue, is much less than it would be with a normal and proper revenue.

Item No. 58, operating capital. Here Mr. Miller has taken the view that the necessary operating capital is greater than I have thought necessary; my net, $5,000; his, $7,500. I must say that my estimate is based on 25 per cent of the annual cost of operation, assuming that collections are made every three months, the necessary amount of money to carry the company for those intervals.

Q. Mr. Alvord, I omitted to ask you what experience you had had in appraisal work of this kind, therefore I will ask you to state fully what has been your experience in appraising and valuing water works and property such as the property involved here in this litigation.

77 A. A very considerable portion of my professional work in the last fifteen years has been a study of the principles of valuation and the practical appraisel of waterworks properties, some waterworks and electric light properties. I think I have been con-

nected with close to eighty different proceedings of this kind, in which the property values have aggregated about $140,000,000. These have been works all over the country, large and small. Some of the principal proceedings I have been in have been some of the earlier cases of Dubuque, Iowa, Waterville, Maine, Mobile, Alabama, Knoxville, Macon, Chattanooga, Charleston, South Carolina, Baton Rouge, Louisiana, Vicksburg, Mississippi, and a great many places north of the Ohio river, Omaha, North Platte, Nebraska, Des Moines, Iowa, Peoria, Illinois, Indianapolis, Indiana, and a large number of small places. And I would like to say this, in addition that it has been my good fortune to represent the city as often as I have represented the water company, and I have had the opportunity of seeing this question from both sides. In very many cases I have been made the third member of the board, or the neutral member. I have just completed the water works hearing at Chattanooga, where I have been the third member of the board, and am now, at the present time, the third member of the board valuing the water plant at Lake Charles, Louisiana. I am employed at the present
78 time by the city to report on a reasonable adjustment of revenue and rates for the plant at Burlington, Iowa, and I am also valuing a plant at East Chicago, Indiana, and Indianapolis, Indiana. I am making a new valuation.

Commissioner Northcott:

Q. Were you in the Knoxville case that afterwards went to the Supreme Court?

A. I wasn't in it until after the Supreme Court rendered its decision, and after they got all through fighting the city called me in and asked me to report on the value of the plant in 1913. I made a value, and upon that value the city and the company got together and passed the property.

NOTE.—At this point, it being 5:10 o'clock p. m., an adjournment was taken until 9:30 o'clock a. m. of the following day Tuesday, July 25, 1916, at which time this hearing was resumed as follows:

Judge Sanders:

Q. Mr. Alvord, you spoke yesterday of acquiring an additional supply of water by impounding process. This watershed from which the water would be impounded is located in what state?

A. In Virginia.

Q. Then, of course, that being so,—it is rather a legal question instead of an expert question—it would depend on a voluntary contract and not by the exercise of the power of eminent domain?
79 A. I presume so; that is my information, at least.

Q. You also spoke yesterday in your evidence of a filtration system for the purposes of purifying and clarifying the water from Bluestone. What would be the expense of that kind of a system?

A. It would cost about $40,000, as I remember it, to install a plant, and from fifteen to sixteen thousand dollars a year to operate it, in addition to the pumping and impounding. Those figures are in my report; I am quoting them from memory. They are in that report.

Q. There is one item in your report of valuations which is also referred to in your report of comparison of values made between you and Mr. Miller, which I find on page 117 of report upon the values of the property of the Bluefield Water Works and Improvement Company. I will ask you to make a little fuller explanation of this item, referring particularly to the service pipes—that is, what I mean by service pipes, the pipes connecting with the mains to the property of the consumer.

A. I neglected to explain yesterday, in going over the comparisons, that this item No. 44, there is quite a considerable difference between Mr. Miller and myself. I have a net estimate of the value of these services at $22,000 plus. Mr. Miller has $2,000 plus. The difference in this item is due to the fact that Mr. Miller has
80 included only the cost of furnishing and inserting the corporation cock in the mains, and assuming that the consumer would be required to bear the expense of the service connection. I have computed the whole cost of the service as being the property of the company.

Q. How is that computed by Mr. Miller in his report of values?

A. I don't recall the exact language that he uses in his report, but I gathered that he has only estimated the cost of inserting this corporation cock in the main. It is my understanding that the company put in all these services up to about 1908, something like 1,600 of them, and that from 1908 to about a year ago they required the consumer to pay a portion of them, requiring some kind of a fee, I think, for the service——

Q. Well, that is, you mean for the newly installed service pipes?

A. Yes, sir.

Q. But they didn't require the consumer to pay for the pipes that had been installed prior to the adoption of that rule in 1908?

A. No, sir. And after the order of the Commission about a year ago requiring them to maintain such property, they then, since that time, have put in all the services; and under the theory of the Knoxville decision and the ruling of this Commission I have as-
81 sumed that the services, on a reproduction at this time, are all the property of the company and must be maintained by them.

Q. Whether installed by the company or by the consumer?

A. Or by the consumer; yes, sir.

Q. Of course, you don't know just what service pipes were installed by the consumer and what pipes were installed by the company, as a matter of fact?

A. I have not made an effort in the inventory to separate those. Doubtless Mr. McCarthy can testify on that point with more accuracy than I can.

Q. You have filed with your evidence a report on the division of investment between fire protection and domestic supply?

A. Yes, sir.

Q. I wish you would please explain briefly that report.

A. In this report I have endeavored to show what portion of the final return should be theoretically derived from the public service which this plant renders and what portion of it should be derived from the private service; and in order to do this I have had to make an estimate which would divide first the investment or the value of the plant as between the public and the private service. Now, to do that, I have estimated the cost—I first have, of course, the estimated value of the plant as it now exists doing this duplicate service Then I have made an estimate of the cost of a plant as similar in all respects as possible to the existing plant, but
82 only large enough to provide for the domestic service; and I have again made another estimate of a plant similar in all respects to the present plant, but only large enough to perform the public service. Now, the combined cost of those two plants would be naturally greater than the cost of the existing plant, but they afford me the ratio or the proportion of the estimate which should be made of the existing plant as between the public and private service. That will be found in detail on this report. It then becomes necessary to take the operating expenses and apportion them in the same way, first finding the total operating expenses of the plant as it now stands, then the operating expenses of a plant furnishing only domestic service, and, again, the operating expenses of a plant furnishing the fire service only, and from the sum of those two and their ratios gives the ratio in which we can divide the operating expenses of the existing plant. We have the data then both in investment and operation for each kind of service to proportion the double service afforded by the existing plant; and I find that this ratio so determined would indicate that 35.6 per cent of the income of the Bluefield Water Works and Improvement company, the proper return, should be derived from the public hydrant rentals, or from some form of rental for the public service of fire protection. Personally, I don't believe in apportioning that on the hydrant alone; I think it should be apportioned on
83 the hydrant and the capacity of the distribution system; and I have spread my ideas on that subject on record in a paper which I have read——

Q. You will adopt that as a part of your evidence?

A. Yes, sir, I will present that as a part of my evidence.

Q. The paper that you have referred to as adopting as a part of your evidence I believe you have not yet filed?

A. I have not yet filed, but I will do so.

Q. I wish you would please do so and make it a part of your evidence, marked exhibit—what do you call it?

A. "Equitable hydrant rentals and methods for their determination."

Judge Ritz:

Q. You have that here, have you?

A. I haven't a copy of it here. I can wire for several copies and it will be here before I leave. I have reprints at the home office.

NOTE.—The paper referred to was later filed as evidence, marked as stated, and is hereto appended.

Judge Sanders:

Q. What amount of money should the city of Bluefield pay for fire protection?

A. Well, that involves the question of what amount of money the city of Bluefield should pay as a whole for water service.

Q. Well, I want your opinion about it.

84 A. That is something I don't know. I don't want to presume to anticipate the determination of the utilities commissioners, but it should be——

Q. Well, I will ask you this, what percentage of the water rates should be paid by the city of Bluefield for fire protection?

A. Well, scientifically and theoretically I believe *I believe* that 35 per cent of the entire revenue should be derived from the public service.

Q. Well, what is included in the public service that you refer to?

A. The protection from fires, the public uses of water by the city, franchise uses, if any. Any public, general use to which the city has acquired a right through its contract with the company.

Q. What is the city now paying for water—do you know?

A. Something like $3,000, I think—$3,142 I have noted here, or were at January 1st, 1915.

Commissioner Northcott:

Q. What per cent is that of the total income of the company?

Judge Ritz: A little less than 10 per cent.

A. Its total income that year was $39,800—very close to $40,000. About 12 per cent, isn't it?

Judge Ritz: No, it is about 7½.

The Witness: About 7.9 per cent.

Judge Sanders:

Q. You say that the city should pay 35 per cent for the public service. You mean 35 per cent of the total amount that is

85 paid to the water company for water supply?

A. Yes, sir, of all the return that is available to the company. It, of course, is not a material matter to the company where its return comes from; but it is a matter of equity among

the various consumers as to whether they are paying for that kind of service that they are getting or somebody else's service.

Q. And what per cent did you say that they paid last year on the total amount of the return?

A. Pretty close to 7.8 per cent.

Q. In figuring the reproduction cost of the company's plant, did you take into account depreciation?

A. Yes, sir. I have——

Q. I wish you would explain how that enters into the rate making values, please.

A. Well, in the reproduction theory, the only portion of depreciation which enters into the rate making values would be the present worth of the uncompleted depreciation on existing structures used and useful for the water supply of the city. That is only a portion of the total depreciation taking place in the plant. That amount I have computed at about $43,000, which amount I have deducted from my cost new, and therefore that empties it directly into the question of present value. It is interesting however, to point out that there are other forms of depreciation, both
86 past and present, of which that is only a part. For instance, all of the maintenance account in the operating expense is really the meeting of depreciation due to wear and tear, and is a part really of the depreciation that is taking place. That form of depreciation, however, is met month by month, and we therefore do not have to take it into account when we make an accounting of the plant annually. I have been interested to find that taking the last six years and definitely ascertaining that maintenance account, it is $33,000; and proportioning prior years for which we do not have the exact accounting on the basis of the smaller and smaller size of the plant, that the total of that maintenance for wear and tear up to the present time amounts to $105,000. That is depreciation which has been completed, which has been met, and which has been paid for by the owners of this property.

There is another form of depreciation which has been completed in the same way, and that is the obsolete structures, which we have not included in our inventory here—structures which were at one time used and useful, but which, through growth of the city, changes in the direction of its supply, have gone out of use. I have had the interest to determine approximately the kind, amount, and cost of such structures, and I believe that roughly they amount to about $45,000. That is depreciation which has been completed and paid for by the introduction of new structures of equal or
87 greater capacity by this company.

Commissioner Northcott:

Q. Mr. Alvord, does that include this unused dam that you mentioned yesterday?

A. Yes, sir. The total of those two forms of depreciation is therefore—completed depreciation in the past, is, therefore, $150,000.

Judge Sanders: I don't know that I understand just exactly what you refer to.

Commissioner Northcott: The dam that they put in intending to impound the waters of some spring, and the city objected to it.

Judge Sanders: Oh, yes.

A. (Continuing:) All that form of structure has gone out of use. The total of that completed depreciation, therefore, is about $150,000, to which should be added the depreciation which is uncompleted, unpaid for, which we have computed in this reproduction and deducted because it is unpaid for; which is $43,000, which would make a total depreciation of the plant to date, paid for and unpaid for, of $193,000. I am particularly interested in computing this, because, if I am right in my figures, this company has not been permitted to earn, at the rates, enough money to pay for that depreciation in the past, yet they have still made it good by actual cash investment.

Q. What is the value, Mr. Alvord, of the dam on East River that you have referred to? What I mean by the value is the
88 actual cost of the construction of it.

A. The cost of reproducing it. I put that at $4,000, as Mr. Miller has computed it. I didn't take the trouble to compute his figures on that; I just adopted it.

Q. I don't understand you as putting any value on it. I want to know what was the cost of building it in the first instance.

A. I didn't make, myself, that estimate. I just adopted Mr. Miller's *estate,* because this whole subject, as I consider it, is one of remote interest to the valuation here. It is simply introduced for the purpose of showing about the amount of paid for depreciation for which the company has not been permitted to recoup themselves by the rates in the past.

Q. Your report, I think, shows this, but I will ask you to state what is the total value of the property of the Bluefield Water Works and Improvement company in use in the furnishing of water to the city of Bluefield and to the citizens thereof?

A. My feeling is that that value should be placed at $540,000 for the existing property.

Q. Now, what will be the cost of the necessary equipment or addition to the company's property and plant in order to furnish to the city and to the citizens an adequate supply of water—such demands, I mean, as could be made upon the company, now, at this time.

89 A. My estimates as presented here in the supplementary report on the value of the springs would appear to show that an investment of at least $240,000 for a new and additional supply should be made at this time, and as promptly as possible, to which there should be added about $40,000 more for new distribution mains to adequately extend the present distribution system and supplement it, or a total of about $280,000 new capital ought to be found at this time. This amount, added to the value of the existing property, none

of which I can conceive is reduced by such an added investment, would bring the total value up to the neighborhood of $820,000.

Q. Suppose you figure it out and get it exact.

Judge Ritz: That is what it is.

A. $820,000; yes.

Judge Sanders:

Q. Yesterday in your evidence you referred to the Jarrell spring, wherein you stated that you didn't think it would be practicable to bring the water from this spring to the city of Bluefield. I will ask you to state how long would it take to acquire the additional supply of water referred to by you from the impounding process on Bluestone river?

A. Why, I would think that due to the fact that that proposition lies in another state, and probably a separate company would have to be formed to carry the thing through, and a good deal of
90 the success of its acquisition lies in the ability to secure a good deal of land and water rights, that it would take the best part of two years to get that in operation—actual operation. I think it would take the best part of a year to do all the legal and preliminary work there necessary to start construction, and it would take the best part of—it would take all of one good, long working season to build it, so that if—even if it were started now, hope for relief, in case you had a dry season here—dry spell—you couldn't hope for relief to the people much before the second summer from now.

Q. Pending this, then, can you say that it would not be necessary to acquire the water from the Jarrell spring?

A. Well, I am frank to say Mr. McCarthy points out to me what I had overlooked, that during that interval the Jarrell spring may have to be used, whether I think it is worth anything or not, as an emergency to make good the supply at Ada in times of dry season. If that is true, and I think that is a point well taken, that spring will undoubtedly be worth all it cost in the one season.

Q. How far from the city would your impound be that you have referred to?

A. There are two sites over there. One is in the limestone, near Graham; the other is on the shale about two miles further;
91 and I am inclined to think that a detailed and careful survey and investigation would show that we would have to go up to the site on the shale in order to be sure that our reservoir would not leak water through the caverns and the fissures in the limestone. My estimates, however, are based on the limestone site, about two miles nearer Bluefield and a distance from the twin tanks of about four miles.

Q. How would this water be impounded, the most natural way?

A. Well, we would have to provide some natural reservoir site there where we could throw a dam across Bluestone river for a reservoir which would be large enough to impound all of the necessary water in the wet season to carry the supply of Bluefield through the dry season of the year; and my recollection is that something like 100,000,000 gallons capacity would be necessary to do that in the

dryest year, although that is a matter which I have not gone into in thorough detail as yet.

Q. Could you approximate, or have you figured, what the cost of the reservoir to impound this water in would cost?

A. My approximate preliminary figures here are for a dam costing $65,000, and land costing $15,000, which totals about $80,000; to which should be added 15 per cent for engineering and contingences, something like $95,000 total—probably, in round numbers, $100,000.

92 Q. For the construction of the reservoir alone?

A. Yes, sir.

Q. Referring again to the question of depreciation, I will ask you to state what return ought to be paid to the company to provide for future depreciation—annual return.

A. Judging by a great number of trial depreciations which I have made in the past and then studied at intervals of five years, I have come to the conclusion that the average or normal plant about one per cent of the physical property—value of the physical property—should be set aside every year for that portion of the depreciation which is uncompleted, and outside of the maintenance for wear and tear. That is an average, however; and in plants situated as this is, where the source of supply is difficult, where the growth is rapid, I am inclined to think that ought to be increased to about 1¼ per cent.

Q. You and Mr. Miller practically agree on that, I believe, do you not?

A. I believe we do. I think I noticed in his report somewhere that he has adopted 1¼ per cent as being the necessary future depreciation to set aside.

Q. Mr. Alvord, during the course of your examination you have referred, in a great many instances, to unit prices. I would like to have placed in the record what you mean by unit prices—just a little explanation of it.

93 A. Well, a unit price is the amount found by experience necessary to apply to the unit of quantity of physical property in order to construct that property, and necessarily it must vary a good deal with the condition, location, amount of the property to be constructed, and difficulties encountered in constructing it. It is an amount which we engineers carry as gauging all of those conditions, and which we apply into the unit of quantities of material or supplies to produce the total. Necessarily, in a reproduction estimate, the whole of the judgment of the engineer who is making the estimate is expressed in the unit prices which he adopts, except as he is enabled to check the total cost of the structure after he has applied his unit quantities with other structures similar with which he has had experience, and carries in his mind, so as to see that he has expressed his judgment, in his opinion, properly.

Q. In what way does the inaccessibility of the springs furnishing the water supply to the city entered into the unit prices?

A. Well, they involves the construction of relatively small quantities of material, carried up the mountain side on the backs of men, altogether, entirely inaccessible, I think in almost every case, for team

work, and they involve a difficult climb every day to the work, and in many ways—rock excavation, clearing, which has been de-
94 scribed to me by the men who have actually constructed those works, has seemed to me to be peculiarly difficult and inaccessible work; and therefore, in those cases, I have raised the unit quantities so as to express my judgment of that difficulty in terms of the cost of reproduction.

I might also say that unit quantities should and do increase as the amount of work to be done diminishes. A few cubic yards of material in and out of the way place, the concrete will cost two or three times as much per cubic yard to put in place as would a hundred or a thousand cubic yards put into one structure and under one operation. I have often illustrated this difference by taking the cost of excavation. The highest cost of excavation that occurs to me is where you drive a drive well and take the sand out of the bottom of the drive well with what we call a sand pump, and under such circumstances excavation per cubic yard will run as high as $40. On the other hand, when you are sluicing with a great hydraulic dredge into a large fill by pumping the earth and the water, one of the cheapest forms of moving earth we have, that same cubic yard could be moved for a few cents—5, 6, 7, 8 cents. Now, between those two extremes, the one a great quantity of work to be done and ample means for doing it, and the other a very small quantity of work to be done and very difficult means for doing it, lie a whole series of means of doing work and a different price for doing each
95 kind of work, of which the engineer must be the judge.

Judge Sanders: I think that is all I want to ask Mr. Alvord.

Cross-examination.

Judge Ritz:

Q. Mr. Alvord, in determining the quantity of water necessary to supply the city of Bluefield, what did you figure was the amount to be provided for each inhabitant?

A. Why, I have provided probably about 100 or 125 gallons per capita some fifteen or twenty years from now.

Commissioner Northcott:

Q. Daily?

A. Daily.

Judge Ritz:

Q. Well, why don't you provide as much now as you do twenty years from now?

A. Well, I provide a good deal more than that now, if you take the total capacity of this added supply. I haven't computed that.

Q. Well, in computing the necessities of the inhabitants of the city for water, you then estimate that they ought to have 100 to 125 gallons per day per inhabitant?

A. Well, I estimate that they will use that. I don't say that they ought to have it, but I find from my experience that they will use it whether they ought to or not.

Q. Now, what is the capacity of the Beaver Pond spring?

A. I don't carry that in my mind. I have it among my
96 notes.

Q. Could you give us any idea about what the capacity of it is?

A. On my special report on the value of the springs, page 12, there is a table which gives the minimum, maximum, and average flow of all of these springs. The Beaver Pond spring is given at 175 gallons per minute minimum. The maximum is not given. It was difficult to know. The average is taken at about 525 gallons per minute.

Q. Reducing that to days, how many gallons per day would that be, minimum?

A. Well, there is 1,440 minutes in a day, isn't there?

Q. Yes. It would be about 250,000 gallons a day would it?

A. Yes, I think that is right.

Q. What is the minimum capacity per day of the gravity springs?

A. Well, the measurement of the minimum capacity of the gravity springs, about 240,000 gallons a day.

Q. And what is the minimum capacity of the Ada spring?

A. About 400,000 gallons a day.

Q. Now, that is all the present sources of supply, isn't it, Mr. Alvord?

A. Yes, sir.

Q. And that approximates 1,000,000 gallons a day?

A. Yes, sir.

Q. What would be the average capacity of those springs per day?

A. Well, it might be a million and a quarter.

97 Q. Well, didn't you state the average capacity of——

A. It is very hard to say the average capacity, because we don't know the maximum capacities very accurately.

Q. What is your estimate of the maximum capacity?

A. Personally I have made no estimate of the maximum capacities. I never had occasion to measure them. We have made a measurement of the minimum—some of the minimum capacities. The maximum capacities, I have had to depend on hearsay; and the amounts given here are the information as it has reached me from the superintendent of the water company.

Q. In calculating the minimum capacity of the Beaver Pond spring, did you include the additional spring which has recently been connected with the old spring?

A. No, sir.

Q. You don't know what the minimum capacity of that new spring is?

A. No, sir; it was not connected with the system at the time this tabulation was made.

Q. What capacity did you calculate, Mr. Alvord, on your proposed impounding system on Bluestone river?

A. I estimated on a minimum capacity of 2,000,000 gallons a day.

Q. That would be fully adequate to meet all of the needs of the city at this time, wouldn't it?

A. Well, it would be more than adequate to meet the needs of the city at this time; and if it could be economically developed
98 at a less amount than that it would be desirable to do so; but when you have to go so far and have to develop to such an extent it is very uneconomical to reduce your amount to the precise amount needed at the time. In other words, you have to develop for the future. Your pipe line, for instance, if predicated on the next few years only would be outgrown, and therefore very heavily depreciated, and you can't add to that kind of investment progressively as the need progresses.

Q. Assuming that the growth of the city would be maintained within the next ten years at the same ratio that it has for the last ten years, that plant would be adequate to meet the needs of the city for ten years, wouldn't it?

A. Oh, I would think so. I wouldn't recommend it if I didn't think it would be adequate for at least ten or fifteen years. That would be, in my opinion, the minimum time that you ought to provide for.

Q. I believe you stated that such a plant as you spoke of on Bluestone river would provide for the growth of the city for thirty years?

A. No, twenty-five years, I think I said. That would depend on the growth of the city.

Q. If it didn't grow at all it would be adequate forever?

A. I think so, if it would last.

Q. Then, Mr. Alvord, when that plant is installed, at a cost of $240,000, the present sources of supply would be obsolescent?

99 A. No, sir; they will never be less valuable, in my opinion, than they are now.

Q. What use would be made of them?

A. The same use that is made now.

Q. Wouldn't it be very much cheaper to run one plant and secure all of the water than to run two plants?

A. Yes, but the present supply is the cheapest supply, and you should add, as your needs increase, from the more expensive source. In other words, you should always operate this supply to the extent of its capacity, and as you need more water you should add from the new source of supply—the more expensive source of supply—only as you need it.

Q. Then your idea is that the more sources of supply, the more pumping stations and plants you have in operation, the cheaper you get the water as a whole?

A. No, no; that is now the way to put it, I think. The way to put it, I think, is that the nearest water and the highest elevation water is the most valuable water always in a proposition of this kind. The further away you have to go and the higher you have to pump, the more expensive your water becomes, naturally. Now, we don't

go to the more expensive water and abandon means for obtaining cheap water. That wouldn't be sound judgment or good policy. You retain the cheapest water, the water most easily reached, and you only add the other water as you need it.

100 Q. Suppose they didn't have any water here, and you were building a system here, where would you go for your water?

A. To the gravity springs, first.

Q. But I am assuming now that you have got a state of facts that you know the gravity springs won't provide for.

A. I would develop the gravity springs first.

Q. And you think it would be cheaper to supply water to the town from the gravity springs first, Beaver Pond, Ada, and all the plants operating at the same time, if it was necessary, than to supply from one plant which had the capacity to supply the whole thing?

A. Yes, sir.

Q. Would you keep the Ada plant in operation if the Bluestone plant was in operation?

A. Yes, sir, because the water from the Ada plant is cheaper than the water from the Bluestone.

Q. How much cheaper?

A. About $12 a million cheaper.

Q. I notice in your report on page 7, it being the report marked, "Preliminary estimates for water," that you estimate the cost of producing the Bluestone supply at $71.75 per million gallons.

A. Yes, sir.

Q. I get that right, don't I?

A. Yes, sir.

Q. And the cost of the present supply at $59.30 per million gallons?

A. Yes, sir.

Q. That $59.30 includes the gravity springs, the Ada sup-

101 ply, and the Beaver Pond supply, doesn't it?

A. Yes, sir.

Q. I notice on page 10 of this report that you figure the gravity group as costing $20.30 per million gallons and the Ada group at $84.70 per million gallons. Is that correct?

A. Yes, sir.

Q. Then it is not true that it costs less to get the water from Ada than the Bluestone supply?

A. Not from Ada alone; no.

Q. Then it would be advantageous to abandon the Ada supply if you put in your Bluestone supply?

A. No, I don't think so.

Q. Well, if you were paying $84.70 for your Ada supply and you could get good water from another place at $71.75, I wish you would explain why it wouldn't be more advantageous to get all from the $71.75 place.

A. Because it might be advisable, under those circumstances, to operate Bluestone for the minimum quantity and Ada for the excess quantity, but you forget that we have to produce here the maximum quantities at any time there is a fire, therefore all of these must be in reserve whether we are using them or not. We can't get along with-

out the Ada with the 2,000,000 Bluestone supply. If you were to suggest the abandonment of the Ada springs, or if, for any reason, we had to abandon them, we would be obliged, in my opinion, to increase the investment from Bluestone to 3,000,000 gallons,
102 instead of 2,000,000 which I have computed. In other words, we have our fire protection here to look for, and for that fire protection we must have the gravity springs, the Bluestone, if that is the next cheapest to operate, and the Ada, for our fire protection.

Q. It takes all of those?

A. Yes, sir; if it didn't take all of those, of course I should be in error in developing to such a great extent; but my idea is to develop the Bluestone to the extent that we need fire protection, with the supplies that we already have in hand.

Q. Well, aside from the question of fire protection, the supplies you already have are adequate, aren't they?

A. Oh, there would be times after the Bluestone is developed, undoubtedly for the first few years, it might not have to operate at all at certain seasons of the year when the water is high at other places; but you must hold it in reserve for fire at all times.

Q. The Bluestone project could be developed to the extent that would be necessary for all these purposes, couldn't it?

A. I don't know to what extent I could advise that without further investigation. There are about seventeen square miles of watershed up there, and I have estimated that that might possibly be developed to the extent of 500,000 gallons a day, which would seem
103 to indicate that we could develop to a considerably greater extent than I have estimated on.

Q. And at very little more expense?

A. Very little more—Yes, very little more expense.

Q. About how much more expense would it take to develop the Bluestone project to its maximum?

A. Oh, I don't know. I have not the data which would enable me to determine that. It might be entirely impossible to develop it to its maximum. There might be lack of storage opportunity there.

Q. You didn't look at it with a view of ascertaining to what extent it could be developed?

A. Well, the whole question needs a very thorough and careful, painstaking engineering investigation to determine precisely what can be done up there, and, of course, that I haven't given. I have only put down those things which I can see will probably work out, and I have only attempted to indicate that it is possible to get the additional water supply there rather than go to the New River or any other very distant source. I feel confident that it can be produced there; I am confident that more than 2,000,000 gallons can be developed there; but I couldn't say to what extent that watershed could be developed without a more careful investigation.

Q. Mr. Alvord, in making up your estimate of the cost of reproduction, you have included all of the items of real estate
104 owned by the waterworks company, haven't you?

A. I believe so; yes, sir.

Q. And you have included this at a value in excess of what was paid for them, haven't you?

A. No, sir. I have no knowledge of real estate values in Bluefield, and my figures are based on the report of two gentlemen who are in the real estate business in Bluefield, Messrs. Easley and Donahue. They were requested by me to give me the value of the lands without the improvements or the water rights.

Q. Without considering the question of water rights?

A. Yes, sir.

Q. Well now, item No. 1 you have here is 5/10 of an acre of land conveyed by Estill Bailey and wife. You valued that at $25. Whereabouts is that?

A. That, I understand, is the No. 1 spring shown on the map of the springs.

Judge Sanders: Well, refer to that—"filed with the inventory of the company's property."

A. Filed with the inventory of the company's property, exhibit No. 28-*a*.

Judge Ritz:

Q. Now, Mr. Alvord, these properties, as real estate, independent of their water value, are not at all useful to the water system, are they?

A. Why, certainly they are. How could you have water rights without real estate?

105 Q. Well, isn't the value of them to the water company for their water value?

A. Water value, but then you have to have real estate with any kind of a water right.

Q. Yes, but what I am driving at is this. You have valued these as real estate, then you have also valued them at what you think they are worth as water propositions, and have put both of those values in there. Doesn't the latter include the former?

A. No, sir, because when I came to value the water rights I deducted the value of the real estate and improvements. I found the value of the water right in excess, over and above the real estate and improvements, not with them.

Q. Well now, I call your attention to item No. 15, under the head of Ada springs, which seems to be a farm of 236.25 acres, that you value at $5,000 as real estate. What is the value of that, or the use of that, to the water company as a water company?

A. Well, that farm lies, as I recall it, just above the Ada spring, and the best of my recollection is that the springs on it couldn't be obtained with any less land than the purchase of the whole tract, therefore in part it has a value as protecting the lower spring from pollution, and in part it has a value because it was necessary to acquire it in that way.

Q. As a matter of fact, this farm was purchased for the pur-

106 pose of protecting that water to be impounded down there in that reservoir, wasn't it?

A. Well, that is one of its advantages, undoubtedly.

Q. And if it was purchased for that purpose, then when the reservoir became obsolete that use of the farm was also gone, wasn't it?

A. Yes.

Q. No. 18, Walter T. Bailey and wife, 41.88 acres. What particular use is that to the water company as a water proposition?

A. Well, that proposition is practically comparable to the other Bailey farm that we have just been speaking of.

Q. That was purchased largely, if not entirely, for the purpose of protecting the water impounded in this reservoir, wasn't it?

A. Well, I am not competent to say that; my information is it was purchased because it had to be purchased to get that spring.

Q. There is a spring on it?

A. It undoubtedly has a value as protecting that spring from pollution or accident, because it provides an environment which is under control.

Q. Another item I call your attention to on page 35, Honaker mill, reservoir, and dam, $3,500. Where is that property?

A. I am not fully informed as to all this past history, but the Honaker—so called Honaker mill, reservoir, and dam has the Ada spring in part on it, and the impounding reservoir is located on it, and I believe this impounding reservoir which we called
107 obsolete is also on it in part.

Q. Now, what else did you say was on it except that impounding reservoir that is obsolete?

A. The impounding reservoir for the spring out of which the pumping station supply is drawn is on this tract. Mr. McCarthy informs me that the spring itself is on this tract.

Q. There is a spring on this tract?

A. The Ada spring.

Mr. William McCarthy: The Ada spring.

Judge Ritz:

Q. Your report doesn't show that, does it?

Mr. McCarthy: Well, it is on it.

A. It doesn't seem to.

Judge Ritz:

Q. The report shows the spring on an entirely different tract, doesn't it?

A. It appears to.

Q. That is true, isn't it?

A. Yes, sir.

Q. Now, I notice on the inventory which you have filed, under tract of land, 56.15 acres, Calfee and R. H. Bailey, which lies contiguous to the 99.36 acres. What value is that tract of land as a water works proposition?

A. Where is that tract again, sir?

Q. The tract of land lying contiguous to the 99.36 acres called the 56.15 acres, Calfee and R. H. Bailey.
A. Where do you find this item?

Judge Sanders: On the report of values. What page is it?
108 A. Well, I have not looked on the report of values. I will see. To save time, I will say I don't think that is in our inventory.

Judge Ritz:

Q. I don't find anything on here that corresponds with it, unless it is this Ruble farm down here at the bottom of page 35.

Judge Sanders: That is different, Judge.

Judge Ritz:

Q. You have got a Ruble farm on here, valued at $500, 46.50 acres. Where is that?
A. You have got me helpless on these local names.

Judge Ritz: Well, I will get that from Mr. Mack. He is going on the stand, isn't he?
Judge Sanders: Oh, yes.
Judge Ritz: I will get all that from him.

Q. Now, Mr. Alvord, you have figured, as your first item of cost of reproduction, what you call preliminary cost, amounting to $14,455.
A. Yes, sir.
Q. That, I believe you state, is figured as 3 per cent of the value of the property?
A. It is my recollection it was 3 per cent on the physical items of the property.
Q. Yes, on the physical items. Well, that is all of the items except the $50,000 water right value, isn't it?
A. Yes, and going value and overhead charges.

Commissioner Northcott:

Q. Operating capital?
109 A. Operating capital.

Judge Ritz:

Q. Now, of that you figure 1 per cent is the cost of procuring the franchise?
A. No, I don't say that.
Q. How did you figure that 3 per cent?
A. I considered that engineering investigations for source of supply would be at least 1 per cent of that, or about $5,000; that the legal expenses for forming the company and negotiating with the city for contracts, for optioning real estate, acquisition of franchise would be at least about $5,000 more, and that the remainder would

be made up in the necessary expenses of the company, its organization, its officers, its clerical, accounting and traveling expenses in connection with the bringing of the project up to a point where building could begin.

Q. Now, this is all money to be expended in advance of the project being started at all?

A. Well, you can't say that. It is in advance of the project being put on a contractual basis with the city. The project is started when it is first conceived in the mind of the promoter.

Q. Well, it may be spiritually started then, but not physically?

(Witness laughs.)

Q. This is all, then, expense that is incurred before you physically begin the work?

A. Before you can say to the engineer "we have a con-
110 tract, go ahead and build the plant on the lines you figured in your preliminary work."

Q. In other words, this is expense which should be incurred before you can procure your franchise?

A. Yes, sir, it is the necessary condition you must be in before you can secure your franchise and know what you can contract for.

Q. This company has a perpetual franchise? That is your information?

A. Yes, sir.

Q. I don't know whether there is a copy in the record or not.

A. Yes, sir, there is a copy in the inventory.

Q. And if this franchise was secured without cost to the company then it did not, as a matter of fact, spend those items before securing the franchise, did it?

A. Oh, yes. There is a good many more important things there than getting the franchise. The very proposition as to how that franchise's terms are going to be made, both from an engineering and legal standpoint, must be thoroughly understood by any set of men proposing to furnish this city with a supply of water.

Q. Have you any information as to how much was paid for legal expenses and engineering expenses for the purpose of getting this franchise?

A. That doesn't concern me at all. I am talking about building this property today, in this city, today; I am not going into the historic past.

111 Q. You have no information on that, have you?

A. Not that I remember. I have made no investigation here as to the past cost of this property.

Q. Isn't that one of the ways of determining what the present value is?

A. It is if you have all the facts before you; and if the past cost is not recent past cost then past cost method of ascertaining the present value is not a reasonable method to apply.

Q. The cost of the franchise would be reasonable, taking into consideration the fact that it is a perpetual franchise, wouldn't it?

A. No, sir, because the historic conditions have all changed. This

is now a large town; the franchise here is a much more important matter than it was thirty years ago. The contractual relations are and would be very different from what they were thirty years ago.

Q. Is the company paying any more for it now than it did thirty years ago?

A. The company hasn't acquired franchise recently.

Q. Does it cost the company any more now to meet its obligations on account of the franchise then it did twenty years ago or thirty years ago, when it got it?

A. Why, yes, sir, it does, very much more.

Q. How much more?

A. I couldn't say, but thirty years ago all they had to do was to run a gravity line from the nearest spring that supplied the
112 whole town. Now they will probably have to go outside of the state for water.

Q. What did they pay for the franchise?

A. I don't know.

Q. As a matter of fact, if they agreed to put in a certain number of hydrants free of cost to the city, and have been doing that all the time, and that obligation is the same now as it was when the franchise was granted, then the obligation they made to the city is the same now as it was when the franchise was granted, isn't it?

A. So far as that goes, but that is not the cost of reproducing this franchise.

Q. Now, the additional cost of going outside of the state for water, you expect the company to be compensated for that, don't you?

A. I think so; yes.

Q. But the thing that you don't expect them to be compensated for is the free service they give the city for that franchise, and that is the same as it always was, isn't it?

A. No, I couldn't say that. The service they give now is worth very much more than it was thirty years ago.

Q. They are asking to be compensated for that additional expense, aren't they?

A. What has that to do with the franchise? The franchise is merely the right to do business in this town. I have not allowed any value to the franchise at all; I have only estimated the neces-
113 sary cost of negotiating it, on the assumption that there was a willing seller and a willing buyer, and all they needed was the time and attention and legal thought to get together. I have not placed any value on this franchise.

Q. You don't value the franchise as worth anything?

A. No, sir.

Q. But you figure that the $14,455 would be the amount reasonably expended in securing it?

A. Oh, no, not at all. That $14,000, only a very small portion of it has to do with the investigation necessary as to how the contractual relations can be sustained, how that water can be found and delivered to this community.

Q. Mr. Alvord, what would have to be done in order to spend this $14,455? What would you buy with it?

A. Well, my dear sir, if you had ever been through one of the

organizations of one of these companies, you would see that just these things that I have stated here have to be done.

Q. Now, you say engineering. What engineering would you have to do in order to make your application for a franchise?

A. Why, you would have to know absolutely in advance that you could supply water from some source to this town. I appreciate that most people think that these things are just a matter of guesswork, but they are not. I know of no company, or no capitalists—never have met any—who rushed into these things without spend-
114 ing a great deal of money to assure themselves just what they could do, how they could do it, what the facts were, in advance; all the investigations have to be made to assure themselves that they are not doing something that is foolish. That is the most necessary part of the expenditure of this company; there is not any dollar that is spent in this enterprise that is more necessary and more proper and more prudent than that amount that is expended.

Q. Can you be a little more specific than that and say just what is to be done with this $14,000?

A. If you will turn to page 33 of my valuation you will find the whole thing outlined there.

Judge Sanders:

Q. That is the valuation filed with your evidence?

A. Yes, sir.

Judge Ritz:

Q. I find a number of items here, but you don't say how much for each item.

A. Well, I explained that to you on direct examination. I will go over it again.

Q. My recollection is you said 1 per cent was for certain items, and you state that was not so.

A. You said 1 per cent for the franchise. I didn't say that. I did say that 1 per cent was for the engineering investigations, analyses and surveys which would enable the company to know where they could get water, how much it would cost them, and what it would cost them to deliver it. That, to my mind, is one of the most important things to be done before the company could
115 enter into contractual relations with this city. And I did say that I had looked over some eighteen examples where I had gone through that phase of the subject myself in companies that had been formed, and they averaged 1 per cent in eighteen cases, and I thought that 1 per cent was very conservative here, because the difficulties here are unusually great. I also said I thought another one per cent would be due for legal services in forming the company. The company must be organized, or the promoters must know how they are going to organize it, and enter into negotiations with the city for contractual relations on the assumption that there is a willing seller and a willing buyer, without assigning any portion of that expenditure to the value of the franchise as a franchise, simply the cost

of getting into the minds of the city authorities and getting into the minds of the company the precise mutual arrangement which they must enter into. You know, as a lawyer, just as well as I do that that takes a good deal of time, care, and attention, and is a slow educational process when you are dealing with a municipality; and I did say that there was a balance in my judgment which would be necessary for the expense of the company, their traveling expenses, their conferences with the city, their clerical expenses, their optioning of real estate, their negotiating for the necessary bond issues of capital required, and other like legitimate expenses which
116 they must know all about before they enter into contractual relations with the city.

Q. Now, those are the things that that $1,500 is for?

A. Yes, sir.

Q. And you don't know whether any of that was spent in this case, at all?

A. I am not interested at all in what is done in the past; when I enter into a reproduction estimate the past is a blank, unless it is some recent cost, or some particular item which will throw some light on what it would cost in the present.

Q. Now, you stated that 1 per cent, you thought, would be the amount necessary to organize the corporation?

A. Three per cent—— Oh! One per cent; yes, sir.

Q. For the purpose of organizing the corporation and procuring the franchise—that is, as you have stated it, getting the council and the water company in a frame of mind where they could agree. To whom would that $5,000 be paid?

A. Attorneys, like yourself.

Q. Then you think that attorneys would get $5,000 for procuring a franchise?

A. Not necessarily.

Q. Just wait till I get through. (Continuing:) Such as is in existence in this case, and for organizing such a corporation as we have here?

A. Not necessarily all of that for the legal expenses. There are plenty of legitimate expenses necessary to educate the public
117 and to educate yourself when you are going to contract with the public as to what type of franchise you are going to enter into.

Q. You have the type of contract you are going to enter into here. It wouldn't require 1 per cent for that?

A. I didn't say 1 per cent for that.

Q. Didn't you say 1 per cent was devoted to organization of the corporation and procuring the franchise—that is, getting the council and the company into the frame of mind where they could agree on it?

A. I didn't at any time say 1 per cent was applied to securing the franchise.

Q. I haven't said that either, have I?

A. You are leading in that direction.

Q. Didn't you say that 1 per cent was set apart by you for the purpose of organizing the corporation and procuring the franchise, and

that you meant by procuring the franchise not only the preparation of the papers, but getting the council and the company in mind to deal with each other?

A. No; I added a lot of other things. I said advising the company legally as to its organization——

Q. You say advising them in regard to its organization. I had that in, didn't I?

A. And advising them as to all their matters and their business and their relations to the state, the conduct of their business, their acquisition of money, and any legal advice which a company
118 stands in need of when it is being formed, which, as you know, enters into a great variety of important matters.

Q. That is all work of organization of the corporation, isn't it?

A. Yes, but that work of organization is largely legal. It includes a great deal more than getting the franchise, although that is an important element in it.

Q. How much would you pay for the organization of the corporation and how much to getting the public up to the point of granting the franchise?

A. Well, I wouldn't attempt to go into the details, because they vary so widely in every case; but I have never observed—This is not a reflection on the legal profession—I have never observed that the lawyers got less than the engineers.

Q. Now, Mr. Alvord, if this particular company procured its franchise and started its operation without incurring this preliminary cost, which you have put in here as, in round numbers, $15,000, they ought not to be entitled to receive the return on that money they have never spent?

A. Why, they certainly have. It is just as absolutely legitimate money spent as any money spent in securing this plant.

Q. I say, if they never spent it.

A. If they never spent it in the past it is no reason why they would not have to spend in now on a reproduction. We are getting at the value of a reproduction today.

119 Q. Then it is your idea that whether they spent this money or not they ought to get a return on it?

A. They surely had.

Q. Now, the real estate you say you know nothing about the values of that, but got that from other sources?

A. Yes, sir.

Q. The item of rights of way—how did you arrive at that valuation?

A. Well, that was taken largely from the actual costs to the company of the right of way, and certain things which had to be done in procuring such right of way to satisfy the owners.

Q. Did you base that on the amounts actually paid for these rights of way?

A. Yes, sir.

Q. Then these figures that you give here are in the main the amounts that were actually paid for the rights of way?

A. Yes, sir, in the absence of better information. It is proper to

say I hardly believe that those rights of way could be obtained at the present time for the amounts there enumerated.

Q. I notice you have on page 36 a right of way from H. B. Bailey and wife valued at $100. Where is that right of way, Mr. Alvord?

A. Page 36, you say?

Q. Yes.

A. What item are you looking at again?

Q. It is March 15, 1902, H. B Bailey and wife to Bluefield Water Works and Improvement Company, you valued at $100, on page 36.

120 A. My information is that that is on the 10-inch line from the Bailey spring—Beaver Pond spring, crossing Adams street.

Q. That is obsolete now, isn't it?

A. I don't understand it is. The pipe is in use.

Q. Hasn't that pipe been discontinued and laid in the street now?

A. I am not informed; it wasn't at the time this valuation was made.

Q. How about the Eliza Bailey valuation just above that? Where is that?

A. My information is that that is along the same line nearer town.

Q. Is that still in use?

A. It was in use at the time this valuation was made, to the best of my knowledge and belief.

Q. The last three items in that group are right of way on that same pipe line, aren't they?

A. I believe they are.

Q. Taking the items of rights of way there for the Beaver Pond spring, I wish you would state whether or not all of those rights of way are now in use by the company, or are they useful by the company, in view of the fact that that part of the town is laid out in streets?

A. They were at the time this valuation was made, and up to the last that I knew anything about the property.

Q. The next subdivision of this item is buildings and improvements. You have one frame cottage at the Beaver Pond

121 spring valued at $400. For what purpose is this cottage used?

A. Well, I am not informed what it is used for now. It was a cottage that was evidently bought with that property, I should imagine, and occupied possibly by the guardian or watchman or keeper there.

Q. That is the only use the company could have for it?

A. Evidently.

Q. Now, at the Ada station, how did you arrive at the value of $400 for that house?

A. Well, I relied—I made an estimate of the value of the house, but I have revised it down to its present worth very largely on the advice of real estate people here, and Mr. McCarthy's judgment and opinion, as I was not fully informed as to the value of such old houses.

Q. You calculated the original cost on the basis of its cubical contents, didn't you?

A. I presume likely; yes.

Q. You didn't value it item by item, so much for roof and *roof* much for weatherboarding and all those things?

A. Yes, sir. The difficulty I was under in valuing such old houses as that was to know how much depreciation, in the popular judgment, was put on them, and as to that matter I had to seek advice from people that knew more than I did about it

Q. Now, if you ascertained its first cost by taking the separate items that go to make up the house and valuing them, why did you calculate the cubical contents of it?

122 A. Well, that just gives an idea of the size of the house to anybody that is looking over the proposition.

Q. That was the only purpose of that?

A. Yes, sir.

Q. This three-room cottage at the Ada pumping station, valued at $350, what is that house used for?

A. I think the engineer or some of the men there occupy it.

Q. How did you arrive at the value of that house?

A. In the same manner as the item previous.

Q. You have a house on the Henry Bailey farm valued at $2,000. What is that house used for?

A. I don't know that I know.

Q. It is not of any value as a water works proposition at all, is it?

A. Unless it had to be acquired with the property, and unless it can be used for the keeper or the inspector of the springs.

Q. Well, it is not used for any such purpose as that, is it?

A. I don't know; I couldn't say as to that.

Q. The barn or crib on this property you value at $300. That hasn't any particular value as a waterworks proposition has it?

A. Except as it has to be acquired. You sometimes have to buy things for waterworks uses which after they are acquired do not have distinctly water works uses, but they must be held, must be kept, must be preserved, must be made to return revenue.

123 Q. Well, they ought to be rented, the same as any other property, oughtn't they?

A. For instance, we very frequently have to buy whole watersheds for reservoir purposes, and the farm houses frequently standing on them. Now, it is the part of prudence, and perfectly proper, to retain those houses and rent them so as to reduce the rates for water to the community.

Q. They are a separate proposition from the waterworks entirely?

A. No, they can't be separated from the waterworks, because you couldn't have acquired the property without acquiring them. If it was possible to sell them and move them off you could do that, but you can't be blamed for having acquired them if there was no other way to get it.

Q. You have got the fence on this farm valued at $1,050. That has no value as a waterworks proposition, has it?

A. Why, certainly. If you have to hold the property you want a fence around it.

Q. It has no value to the waterworks, has it?

A. Yes, sir, that protects it from people who might pollute the water accidentally, or wantonly or willfully.

Q. That could be done by fencing the spring, couldn't it?

A. I think not.

Q. It wouldn't be necessary to fence the farm?

A. Yes, sir, I think so. It shows that the property is being protected and cared for.

Q. You have, on page 49, a house and barn near Ada
124 spring. You value the house at $450 and the barn at $75.

Are those houses being used for the purposes of the company's business?

A. I couldn't say as to the present house. They may or may not be occupied by the company; but the same line of reasoning applies to any house necessary to the purchase with the property.

Q. You have a house at the Ruble farm valued at $600. This is the Jarrell spring, which I believe you say is the spring that is not useful to the water company as a water property?

A. Well, that item is not included in my final totals at all.

Q. The item of $600?

A. No, sir. I have it here in detail, but it is not included in the totals.

Commissioner Northcott:

Q. Is there anything on the report to show that it is not included?

A. Yes, sir; it is mentioned and then shown to have no value except as real estate.

Judge Ritz:

Q. Well, I notice your totals on page 42, buildings and improvements, are $11,001.75, and that includes that item of $600, and then your summary in the first part of this book, your total is $11,002 for buildings and improvements. When did you get at that $600?

A. Well, it is my impression that it was not included. I may be wrong. I may be wrong about that; it may have been included. It appears to be, as you say.

Q. That ought not to have been included, ought it?
125 A. Why, I think it had; yes, sir.

Q. That is in the same category as the Jarrell spring property?

A. I can't bring myself to believe that the company is not justified, having adopted the policy of buying these springs, in buying that Jarrell spring. There may be reasons why it may become very valuable to them, and, as I said yesterday in answer to the Commissioner's question, my own opinion is that they ought to go to larger sources of supply at this time, and if so, if I am right, then this lies in that twilight zone as to whether the judgment was good or bad, which may turn out either way. I may be wrong, and it may be very much needed, as I suggested this morning, for emergency purposes, pending the other supply; but it is water, and it is the

duty of this company to look ahead and provide and equipt itself with all the sources of water which it believes or has reason to believe are going to be useful to it; and in my opinion the benefit of the doubt along that line of investment should be given to the company, not against it.

Q. Well, what I asked, M. Alvord, was simply whether or not that was not in the same category as the Jarrell spring property. It is part of the Jarrell spring property?

A. It is part of the Jarrell spring property; yes sir.

Commissioner Northcott:

126 Q. Mr. Alvord, let me ask you, if you think it should be included, why were you under the impression that you had not included it?

A. Well, possibly I had not refreshed my mind as to the exact course that item should take, but I was under the impression, and still am, that somewhere I did not include water rights for the Jarrell spring property.

Q. I didn't catch that.

A. I am under the impression that I left out the water rights on the Jarrell spring property as not having any very great value that I could see.

Q. I am speaking of the house.

A. The house here is apparently included with the real estate.

Q. I say, if you think it should be included, why were you under the impression that you had not included it?

A. That I had not included it?

Q. Yes.

A. I say I am under the impression that somewhere I have depreciated that. I don't put my finger on that at this moment.

Q. You don't get my question, Mr. Alvord. If you think it should not be depreciated, why are you under the impression that you did depreciate it?

A. I don't know that I understand that. Will you read that question?

(Question read.)

A. If I should think it shouldn't be appreciated?

Judge Sanders: If you think it should not be depreciated.

The Witness: Why did I depreciate it?

127 Judge Sanders: Yes, that is the question, as I understand it.

A. Why, I think my opinion was, when I made this valuation, which you understand was made last year, that my opinion was that the water rights on that spring were hardly worth much in view of the necessity for going elsewhere for water.

Commissioner Northcott:

Q. Mr. Alvord, I am not talking about the water rights; I am talking about this particular house, this $600 item.

A. This particular house was bought with the piece of land, as I understand it, and the piece of land, as land, I have included in this estimate, as I remember it, depreciated on account of its age. This $600 is its present worth as marked here.

Q. Yes, but you stated a moment ago that it wasn't included in your total.

A. I think I am in error on that.

Q. You now say you think it should be included in that total?

A. Yes, I believe that real estate should be.

Q. If you are of the opinion now that it should be included, why were you under the impression that you had not included it?

A. Well, I wasn't—My mind wasn't fresh on what actually had been done by me with that item last year when I valued this property. I probably got confused as to what I did actually do. This valuation was made last year, and I have had to freshen up
128 my mind on all of these items, and there are a great many of them, and I presume I cannot fully recall now as to precisely what happened to each one of them at the time I made this estimate.

Commissioner Northcott: Pardon me for the interruption, Judge. Go ahead.

Judge Ritz: Yes, that is all right.

Q. Now, the next item, which is No. 3, the gravity springs, you have a present physical value for that item of $13,876. That represents the work that has been done on the springs, doesn't it, Mr. Alvord?

A. Yes, sir, I believe it does.

Q. And at page 43 and following, you have itemized that work?

A. Yes, sir.

Q. And the number of units and the value of each unit you have given as you fixed them in that itemized statement?

A. Yes, sir.

Q. All the way through.

(No answer.)

Q. Those unit values are pretty high, aren't they?

A. You mean relatively, or——

Q. Well, actually.

A. From one point of view they are pretty low.

Q. From what point of view are they low?

A. Well, if you had climbed up there to every one of those springs and seen the situation and location and environment and been offered the opportunity to do that work, I think you would
129 feel they were pretty low.

Q. Now, there is no item in here for climbing up to the springs. This is for doing the work?

A. Yes, that is in there all right—climbing up to the springs. It is in these unit prices. It is supposed to be. Whether there is enough in there or not, I am not so sure.

Q. You have got $50 for clearing a half an acre of brush and wood. Fifty dollars—don't you think that is a pretty good price for it?

A. No, I don't; I wouldn't take the contract for that myself.

Q. I understand that. Don't you think that is too much for it?

A. No, sir, I do not, as it was described to me by the men that actually did the work on the ground, barring the fact that they had to climb up the mountain every day to their work, that they had to carry their supplies on their backs, and that the mountainside is a mass of debris, rock, brush, especially in these ravines or draws where the springs occur.

Q. You have infiltration lines, 20 lineal feet of vitrified tile in a 4-inch rock trench, at $2.25 a foot.

A. Will you kindly give me the page?

Q. That is on page 43. Do you mean by that that that trench is dug out of the rock that that is laid in?

A. It is dug out of a mass of debris such as I have just described, stuff that has tumbled down from the top of the mountain
130 and lodged there, built up a mass of broken rock and logs and all sorts of debris that comes down with the torrents that rush down a mountain there after a storm.

Q. It is not cut out of the solid rock at all?

A. No, I don't think it is.

Q. Now, does that $2.25 a foot include the cost of laying the pipe and the pipe too?

A. Yes, sir.

Q. Well, don't you think that is a pretty big unit price for laying a tile under such circumstances as that, $45 for twenty feet of it?

A. No, I don't. I have taken pains to go up to every one of these springs with the men who did this work, and have a description from them as to what was done and saw with my own eyes what they had to meet; and I don't believe this is really high enough. If I should change it I should be inclined to raise it rather than lower it.

Q. I notice on this same page, under the head of "head house," you have 1.7 cubic yards of concrete in basis at $20 a cubic yard. Don't you think that it is pretty high for concrete?

A. Not in that location. I have known concrete that cost $40 a yard; some concrete I know of has cost $100 a yard.

Q. Don't you think you could take a wagon and haul material and take materials for concrete and haul it to the top of East River Mountain for less than $20?

131 A. No, sir, I don't think so. No wagon can get to this place. The cement and sand and gravel had to be carried up on men's backs.

Q. They got the stone there, didn't they?

A. I suppose they broke the stone up there. Usually you run stone through a rock crusher. This had to be broken with a sledge hammer.

Q. It doesn't take long to break up enough stone for that, does it?

A. It takes considerable time.

Q. How far would you have to carry the sand and cement?

A. Well, I would be more or less making a guess at that, but certainly 2,000 to 3,000 feet, in some cases.

Q. In this particular case I am talking about, where this 1.7 cubic yards of concrete was used in the basin.

A. Well, I couldn't identify that particular spot now. Speaking generally, the smaller quantities of concrete you have to place the more your concrete costs you, and unless it is right down close to your base of supplies; and the more inaccessible it is and the more difficult it is to get your material the more it is going to cost you.

Q. How much cement would it take to make 1.7 yards of concrete?

A. Well, it would take a couple of barrels.

Q. How much sand would it take?

A. It would take one yard and a half.

Q. How much rock would it take?

132 A. It would take 1.7 yards.

Q. Of Rock?

A. Yes.

Q. And you would only have 1.7 yards when you got through?

A. No, that is right; that is right. The cement and the sand goes into the spaces between the rock, and the cement goes into the space between the sand, so what appears to you to be an oddity is really so.

Q. It would take 1.7 yards for each of these things?

A. Yes.

Q. And you would only have 1.7 yards of all when they are put together?

A. That is so.

Q. You never put an equal amount of sand and cement and rock?

A. No, it is about twice as much sand as cement.

Q. And about twice as much rock as sand?

A. Yes, sir, but the rock has to be the full cubic contents of the fully quantity of concrete, and the gravel and sand goes into the spaces between the rock. When I spoke of a yard of rock I meant a yard of rock, broken, crushed, which has spaces between it, and you fill those spaces with the sand and gravel, and you fill the spaces between the sand and gravel with cement, so what appears to be three or four times the material all goes into one cubic yard.

Q. You take the space of a cubic yard, and you fill that clear full of rock?

A. Yes, sir.

Q. And you take another space of a cubic yard and fill

133 that with sand?

A. No.

Q. And put that with the rock and still have one cubic yard of both?

A. No. If you had been paying close attention to me you would have heard I didn't say that. I said a yard and a half of sand.

Q. How much cement?

A. About a barrel and a half. But you have got to carry up there more of all those materials than you actually use. You have got to have a little left over.

Q. What do you want it left over for?

A. Because you can't underestimate your quantity and then not finish your job and let it set. Of course, this is all kindergarten, but I am glad to instruct you about making concrete.

Q. I don't doubt that. You said about a barrel and a half of cement. How much would that be in yards?

A. I don't know. It is enough cement to fill up the interstices of the sand and gravel.

Q. Now, the next item,—you don't seem to make much progress on that——

A. No. I hope you are learning, though.

Q. No, I am not. (Continuing:)—is $40,000 for the water rights at the gravity springs. This is in addition to the values you put upon them as real estate.

A. Yes, sir.

Q. And in addition to the values you put upon the build-
134 ings on them?

A. Yes, sir.

Q. In other words, you have departed from your theory of physical valuation when you get to this item, haven't you?

A. All my theory of physical valuation is based upon reduplication, and this water right is based upon reduplication.

Q. And you figure, to get these springs now, if the water company didn't already have them, would cost $40,000 more than they did when they did get them?

A. No, I don't say that. I think it would cost a good deal more than that to get them now.

Q. Then you have departed from your theory of reduplication?

A. No, because I never reduplicate a thing *on* the most expensive way to reduplicate it. The most expensive way would be to consider what you would have to pay those greedy farmers up there, who think springs are gold mines. The least expensive way to reduplicate that water at the height where we use it is the next nearest most available supply.

Q. Yes, and that would be $40,000 more than the cost of these springs?

A. Well, that would show us that the next nearest available supply to where we use it would cost us more than the amount of the real estate and development of this water by $40,000.

Q. In other words, if these springs were not here, then Bluefield would have to pay $40,000 more to get water than it does
135 have to pay?

A. That is it.

Q. And the water company should have a return because Bluefield is favorably located toward these springs?

A. No, that is not my theory. My theory is this, that this company having exercised its prudence in behalf of the citizens of this city, secured by cautious negotiation these springs—they probably couldn't buy them together today for two or three times the amount—they are entitled to something for their prudence, their skill, and their confidence in acquiring these springs, and that amount is measured by the cost of the next nearest available supply.

Q. Well, isn't it the duty of a public service corporation to exercise prudence and caution in the management of its plant?

A. It certainly is.

Q. Then why should they be paid an extra compensation for that?

A. Because prudence and skill are not common attributes of human nature.

Q. Then you capitalize this company's prudence and skill at $40,000 for having secured those springs?

A. I do. I believe that having seen that is a valuable supply, and that they would cost three or four times today what any other supply would cost, they secured that for the people of this city at very much less than they could be bought for now, and they got the benefit of that prudence, and saved to the city, by reason of it,

136 the amount that would be asked for those springs today over and above the amount of that. There is a very large margin in there where they saved money to the citizens of Bluefield. I don't mean to be interpreted as saying that there is no limit to the value of those springs; there is a limit to the value of them. I think a great many people up there on the mountain have got altogether exaggerated notions of the value of those springs. They are asking unheard of and ridiculous prices for them, because they have an idea that the people of this city can't get water anywhere else; that they have got to have those springs and pay any price they ask for them. I think they are mistaken.

Q. You think in some instances the company has paid too much for these springs, don't you?

A. Well, it is just possible some springs have gone dry earlier than the company really expected they would.

Q. And those springs that have gone dry you still put in here and ask for a return on them, don't you?

A. No, sir; I apportion that on the total quantity of the minimum flow of all those springs. I have deducted those springs that have gone dry.

Q. Where they have bought a spring and the spring has gone dry and is of no use, you have still valued the real estate, haven't you?

A. No, I have not. All of the springs are producing something. Some of them are producing a very small amount of water.

Q. The Ada spring, you have an item of water rights

137 in there. That is on the same theory that you value the water rights for the gravity springs, isn't it?

A. Yes, sir.

Q. On the theory that you can get water cheaper at Ada than anywhere else?

A. That was the next nearest available supply after the gravity springs were exceeded—after the demand exceeded the gravity springs.

Q. I called your attention this morning to the statement contained in this report which you filed as preliminary estimates for water supply, on page 10, where it is stated that the cost per million gallons from the Ada spring is $84.70, and to the statement

on page 7 where it is stated that the cost per million gallons from your proposed Bluestone supply was $71.75. In view of those statements contained in this report, do you still say that the Ada spring proposition has a value as a water right in excess of the Bluestone proposition?

A. Yes, because it lay along the line of development, and was the next nearest available supply at that time.

Q. How far is it from Bluefield?

A. Well, it is four or five miles.

Q. And how far did you say the Bluestone supply was?

A. About six miles.

Commissioner Northcott:

Q. Which Bluestone supply do you refer to now, the limestone or the shale?

A. The shale.

138 Q. You based your figures on the limestone, didn't you?

A. Yes, sir.

Q. How far is that?

A. It is about four miles.

Q. A less distance, then, than the Ada?

A. Yes.

Commissioner Northcott: Pardon me, Judge.

Judge Ritz: Yes, I am glad you got that in.

Q. Well, now, I will jump an item or two, because I want to get over here to—I call your attention to item No. 40, Mr. Alvord, which seems to be covered in two statements, cutting pavement over cast iron mains, $28,846, and, B, cutting pavement over cast iron mains, $1,839. Why was that distributed in two items?

A. Well, one is on cast iron mains and the other is excavation on galvanized iron mains.

Q. That is a G instead of a C in one case, I see. I read them both as C. Well, as a matter of fact, when these mains were laid the pavement wasn't cut at all?

A. I don't imagine it was; no, sir.

Q. There wasn't any pavement cut then?

A. No, sir.

Q. And this item of about $30,000 was never expended by the company at all?

A. I don't imagine it was. There are a lot of things that were never expended by the company that are included in the reproduction estimate.

Q. Yes, I understand that. But just the fact that the city spends money in paving its streets over where a water main is, according to your ideas, should impose a burden on the city to pay

139 the water company additional rates?

A. No.

Q. Wouldn't that be the effect of it?

A. No, it simply makes an added value to all the property in this vicinity, including the water pipes of the water company. Water

pipes are always more valuable under a pavement than they are in an open road. A water distribution system is more valuable in a community that is all paved than it is in a community that is not paved.

Q. Now, I say, wouldn't the effect of the paving of a street which had a water main laid in it, if your theory is correct, be to make the city pay additional water rates because the city had paved the streets?

A. Why, I presume that would be the effect of it. So would be the effect of anything which goes to the improvement of the city. Every time you lay down a street car crossing across a pavement it increases the cost of the maintenance of these pipe lines, you understand, to have them under pavements.

Q. But that is a question that comes under maintenance.

A. Yes, but it is always an increasing cost, from a great variety of reasons, to supply water to a large, populous, and improved community than it is over a small village.

Q. The effect of that would be every time the citizens
140 spend money to improve their property they would have to pay the water company interest on the money they spend to improve their own property?

A. I don't look at it that way. Just as fast as the city gets prosperous enough and populous enough to have street car lines and pavements and other pipes and a great variety of police regulations and traffic, so they increase the value of these works, because if the reproduction is a measure of value—If the reproduction is not a measure of value—and it is not always a measure of value—then the works are not increased always by the new pavement, so it doesn't always hold, as you say, that building a new pavement increases the water rates; it only increases the water rates if reproduction, logically carried out—not dodged or wishes away—then the measure of value increases with the difficulty of reproducing it.

Q. I am talking about this particular case. You make your report in this particular case that there should be this $30,000 go in there, because of that street pavement.

A. Yes, sir.

Q. The effect of that is that because the city has spent money improving streets the citizens of the town and the city have got to pay the water company interest on that money that they spent themselves?

A. Yes, sir.

Q. If reproduction is a measure of value?

A. Yes, sir.

141 Q. And you think it is?

A. I do in this case.

Q. The Supreme Court of the United States repudiated that theory?

A. The Supreme Court of the United States got mixed up.

Q. They have repudiated that theory?

A. I don't think they have. I think they will reverse it when it is properly presented to them. The Supreme Court of the United

States decided that income tax was unconstitutional once, but they had more light on it later.

Q. You have got that reversed; they first decided it was constitutional and they later decided it was unconstitutional.

A. I am satisfied in my own mind that the Supreme Court did not have that matter properly presented to them, because no honest engineer, and I will include Mr. Miller sitting right there, will admit that we can reproduce a property without cutting through a pavement unless by some possibility there is an opportunity to put a pipe in a parkway. The Supreme Court can't escape from that. In trying to get away from the paradox you put up a while ago, not seeing the reason for it, getting themselves mixed up with historic cost, which has no place in reproduction estimates, they, in my opinion, went astray on this subject, and will, when it is properly presented to them, correct their rules.

Q. You don't say that reproduction is the only element to be considered in rate making?

142 A. I say there are times when reproduction gives a proper and adequate measure of the value of a property. That doesn't always exist. There are times when reproduction is not a measure; when other things will vitiate it. There are times when past cost becomes a good measure of the value of a property, and those times occur when past cost of a whole property is very recent. To illustrate that, I have just valued a property in York, Pennsylvania, which was a hundred years old, and the past cost of that property, which consisted of wooden pipes and hollow log pipes, two systems which have passed away, the actual *pst* cost of that property was 50 per cent more than its reproduction price. Evidently the past cost wasn't any measure of value on that property. At the same time I was valuing a property around the environs of St. Louis which had all been built up and completed eight years previous, and there wasn't any better evidence, in that case, provided the work was needed and the services were needed by the consumer—there wasn't any better evidence than past cost, with a few changes to bring it down to present value. The cases in which past cost is the best evidence are very few, and the cases in which reproduction cost is the best evidence are very many.

Commissioner Northcott:

Q. Mr. Alvord, aren't there other elements that ought to be considered aside from these two?

143 A. Oh, yes, sir. You want to get all the elements you can. I almost never make a valuation without looking into a whole lot of other things. For instance, I want to know how this works as a whole, when I have got them valued, compares with other works, and if I find it is more expensive than other works in cities of the same size I want to know the reason why. If there is a good reason why I am satisfied. If I find it is only worth half of what works in other communities are worth, I want to know the reason why, and if I can't find the reason why I begin to look around and see whether my own figuring is correct. Then there is

the question of the prosperity and the growth of the community. The works in some communities are worth a great deal more than reproduction because the community is a live community and going ahead, and the property is bound to grow with the community. Another community exactly like it in which reproduction would be the same might be standing still. You would naturally pay something more for the plant in the community which is growing, therefore that plant is worth something more than it would cost to reproduce it; the other plant is not worth as much. There is a great deal of reasoning to be gone through with after you get through with all those detailed reproduction estimates. The trouble is so many people get blinded by all those matters of detail that they forget to go through the general reasoning after they get through to see
144 whether or not their conclusions are justified.

Q. In your opinion, should any weight be given to the value of the stocks and bonds of the company?

A. In certain cases, where a representative market for those stocks and bonds is found. In a case of large utilities in large cities, those stocks and bonds are actively traded in, and they do give you a good clue to what the investing public think is the future value of that property; but in some communities, like this, or the majority of utilities that we have to deal with, there is no active market for such securities, and they are not much known outside of the local community, and therefore they are of less value—the market prices are—than would otherwise be the case. But there is one reservation I want to make on this. Even in those larger utilities where the stocks are actively traded in, the price that is paid for those stocks and bonds is usually more based on the hope of the investor for the future than upon any precise analysis that he makes of the actual condition of the property at the present time. Consequently, they should be taken with some reservation, in my opinion.

Q. In your opinion, should any weight be given to the amount of actual investment expended?

A. Where it can be known I always like to know it if the books have been accurately kept from the beginning I always like to
145 know it, but always with this caution, that there are always expenditures and costs which do not get on the cash record; but I view that kind of evidence always with the feeling that that past cost, whatever it is, has all got to be reduced to the present cost by a process of going through a thousand and one considerations for every detail which makes it almost impossible to use it. For instance, the cast iron pipe costs a great deal more or a great deal less than it does today. You have got to reduce that to today's prices. Money cost a great deal more years ago than it does today.

Q. You mean you have got to reduce that down to reproduction-new value?

A. You have got to analyze what this property cost today from what it cost in the past. If you analyze it correctly, and you are super-human, you might arrive at a resolution which would be near what the reproduction estimate would be, but in my experience that is more than any of us are able to legitimately and intelligently

do. But when your past cost is recent past cost, so that it comes within the ken of those operating, then it becomes of more and more value to you in forming your opinion on value.

Q. In the case of excessive profits earned in the past, do you think any allowance could be made for profits earned in the past, if there was any such, in arriving at a rate making value?

146 A. I don't see how the state, or the community, can go back into the past histories of all these utilities and compensate those that have suffered and fine those that have made money. It would be an almost impossible task; I don't think the courts ever contemplated it. I don't think as a physical possibility we can do it justly, and I think we have got to let the past go. We have got to take these properties as they exist today; we have got to get an edequate conception of their necessity to the community, because they all depend on the need of the community; and we have got to adjust them gradually; we can't adjust them all at once. Some of them that need raising we can't raise all at once, because in a town like this it has got to be gradually raised. We can gradually adjust them to their value, their environment, and their need to the community.

Q. In a growing town, with good prospects for the future, in your opinion should the company be compensated fully as of the present, or should the prospects for the future be taken into consideration? In other words, should the potential value be figures?

A. I don't believe so, because that future involves regulation just as much as the present; and we always have this fact, that in a growing town the return increases a little faster than the population. That is about the only practical way in which utilities commissions find they can really raise rates, is to let the properties alone

147 and let them grow up to their proper return, if they are growing and there is any evidence that they will grow to their proper return. As a matter of public policy, the people will not stand for any tremendous raise in the rates in any utility that they were once used to certain rates for, and we have got to meet that situation; but that is the only way in which the commissions have been able to practically raise rates. Here and there they have had the courage to raise them, in extreme cases, like this one. The Wisconsin commission have done it; other commissions have done it; and there come times when they have to do it; but the great portion of the raise which can be accomplished, for instance, the proper payment of this fire protection in this town, in my opinion, ought to be accomplished by a gradual raise in the amount that the town pays every year; not all at once, because you probably couldn't put it through to put it onto them all in one year, but gradually increasing every year the town ought to pay more for this fire service. If they don't they can't have it; that is all there is about it; there will be a time when this company will go to the wall, because you can't entice capital into a non-paying institution, and Bluefield has certainly got a very difficult water proposition up before it—one of the most difficult I know anything about anywhere.

148 Q. In the matter of the fire rate you speak of, in your opinion what should be done where the estimate as to the

proper amount that should be paid by the city for fire protection comes in contact with the tax rate as fixed by state law, which tax rate, in many instances, is not large enough to permit of the payment of the proportion that is technically figured out for fire protection?

A. In that case I suppose all the alternative is to have the town pay all that tax rate will permit, and have the balance go on the consumers, as it does now.

Q. In your opinion, with regard to this particular case, should any consideration be given to anything except the reproduction-new-less-depreciation theory?

A. Well, we haven't got very much else to go on. The plant is not a recently built plant; its early history is all mixed up with land operations here, so that we can't seem to get an analysis of the investment; and even if we did, from my point of view, that investment would have to be analyzed in a way that I don't think would be possible. And it seems to me that if this community needs this property and the service that it gives, and if this property has been fairly and intelligently installed and operated, and if the service is worth to the consumer what they have to pay for it, or what they will have to pay for it, which means, of course, can they go anywhere else and do any better, it seems to me that those
149 fundamental conditions exist; this property is certainly worth what it would cost to rebuild it if it was suddenly wiped out today and we didn't have it.

Q. Do you think in this instance any consideration should be given to any other value than that of reproduction-new-less-depreciation?

A. Oh, yes, sir; I would say that we ought to consider the special environment here, the difficulties of the water supply, the growth of the city, and particularly the question as to what the service is worth to the consumer; in other words, can he go anywhere else and do any better? On the basis of my estimate, this property has already cost more per capita than the average plant in the United States, and that is very easily seen to be because of the peculiar difficulties; they have to go away out of town in this rough country and get water; but even that extra cost does not and has not given them a proper supply; and eventually, in my opinion, this city will have to pay—whether it does it itself or does it through the agency of a utility; it doesn't make a bit of difference to the reasoning—it will have to pay more both in first cost and in operating expenses than probably double the average city in the United States to get its water. Now, that is a situation which can't be helped; it must be met, and we can't reason it out of existence; and the money for it must be forthcoming, whether the city operate it or whether the company induce the capital to go into it.

150 Q. Mr. Alvord, if it should be the fact that this company was started in connection with a real estate proposition, and that real estate proposition had been very profitable, in your opinion should that be taken into consideration?

A. No, sir. The value of this property lies wholly in the future;

it is only worth something because it is going to serve a need in the future, that is yet to come; and on the whole question of this reproduction we eliminate everything that we think is not going to be valuable in the future, because it is the future need that makes this property valuable. Its ability to grow and develop and supply that future need is the whole foundation of its value. If it hasn't got the ability to supply that future need it is not worth anything.

Q. Reverting to the reproduction theory, can you conceive of a community of this size that would have a water plant put in new, and that hasn't had one gradually built up from the beginning of the town?

A. Oh, yes; we have built ourselves, here two years ago, a new plant—practically a new plant—in La Crosse, Wisconsin—new all but the distribution system. There is the city of New Orleans, a city of about 300,000 people, built an entire new plant in 1909. They had no water supply there before that time except from cisterns on the roofs and a little fire protection system down in the business district; and while it is not common, it doesn't fre-
151 quently happen, for instance, it does happen often enough to enable us to know what we have to do. I built the plant in Gary for the United States Steel Corporation. Gary jumped into 15,000 population the first year, and is now about 45,000 population. We foresaw all that and built a plant for it when there wasn't a house there.

Q. You didn't have to dig up any paved streets, did you?

A. No, but when there are no paved streets there is not much revenue. The paved streets are evidences of prosperity, which is a foundation for revenue.

NOTE.—At this point, it being 12:30 o'clock p. m., a recess was taken until 2 o'clock p. m. of the same day, at which time this hearing was resumed as follows:

Judge Ritz:

Q. Mr. Alvord, I call your attention to the item No. 44, services, unusual excavation, cutting pavement, $24,395. As I understand, there is included in this item the value of the service connections from the company's main to the consumers, and in addition to the actual value of the pipes and work of putting them in, there is included the expense of putting them in if the streets had been paved where they are now paved. Am I correct about that?

A. Yes, sir.

Q. As a matter of fact, these service pipes were all put in
152 before the streets were paved, were they not?

A. Well, I don't suppose all of them were, but I suppose the great bulk of them were.

Q. The great bulk of them. And you say, I believe, that since 1908 your information is that the company didn't put in any of them up until the time this inventory was made?

A. I believe so; yes, sir.

Q. Well, prior to 1908 there was practically no street paving in the town. Isn't that true?

A. I don't believe there was much.

Q. So that any of these service connections that were put in by the company prior to 1908 were not placed under paved streets?

A. No, sir.

Q. Now, what part of that item is for the services that were put in by the company prior to 1908?

A. Well, I don't know that I could state. I hadn't intended to separate it here. I wouldn't be able, without Mr. McCarthy giving me the number of services that were in existence prior to 1908, and he can probably do that better than I can when he gets on the stand.

Commissioner Northcott: Let me get this straight in my mind now. As I understood Mr. Alvord's testimony, it was in 1908 that the company began the custom of making the consumer pay for the connection?

A. Yes, sir.

Q. Up until a year ago?

A. Yes, sir.

153 Q. Then from 1908 till 1915, roughly speaking, the consumer did pay for them?

A. Yes, sir.

Mr. William McCarthy: In Part. We furnished the corporation cock and drilled the main.

Judge Ritz: By the corporation cock you mean the cock that connects the service pipe with the main?

Mr. McCarthy: Yes, sir.

Judge Ritz:

Q. Could you say, Mr. Alvord, what part of this item is charged for the expense of cutting pavements?

A. Yes, I think that is separated here, in page 118, headed, "cutting through pavement over service pipe". That is a part of the unusual excavation.

Q. That item, I believe, amounts to $5,978.50. That is correct, isn't it?

A. Yes, sir, cost new.

Q. Then of the item of $24,395 to which I have referred, $5,978.50 is for the expense of cutting through paving?

A. Yes, sir.

Q. The remainder of it is the cost of the pipes and the expense of laying them?

A. Yes, sir.

Q. How many service connections has the company, or did the company have at the time you made this inventory, rather?

A. They had 2,234 live services at that time.

Q. How did you figure the cost of these service connections?

A. Well, that is shown on page 117. It shows different sized services and the cost per each size and the number of each size.

154 Q. You figured the respective sizes at a uniform price, I notice, and did not undertake to ascertain what the actual cost would be to put in each pipe?

A. No, I figured each—each case I figured the details of that elsewhere. I haven't put all the details in this statement, because they are very—a good deal of it; but I figured the detail, galvanized pipe and the corporation cock, goose neck, curb cock, curb box, got the laying, and all that, and I figured that out and the result for that type of service has been used here as the unit price.

Q. And you applied that to all the pipe?

A. Yes, sir.

Q. You didn't undertake to take each service separately and estimate the cost of it?

A. No, sir.

Q. I notice you have an item, Mr. Alvord, No. 53, engineering and superintending. I believe you stated that was for the expenses of engineering and superintendence during the construction of the plant?

A. Yes, sir.

Q. And that is in addition to the $15,000 of preliminary engineering?

A. Yes, sir.

Q. Well, how did you arrive at that?

A. That is taken as 5 per cent on the items No. 3 to 52, inclusive, which are physical property items.

Q. Well, you have the next item administrative and legal costs. What is that made up of?

155 A. Well, that includes the cost of the company's expenses during the year while the construction is under way, the salaries of the officers, and accounting, legal advice again, and rent and office expenses during the period of its construction.

Q. Then the $15,000 and $22,000 and $9,000, *is* round numbers about $46,000 so far, for preparatory expense, so to speak?

A. Yes, for the brains of the institution.

Q. $46,000 to furnish brains to start it with?

A. Yes, sir.

Q. Then you have got another item, general contingent costs, at $17,920, in round numbers $18,000. What is that for?

A. Well, that represents the fact that it is not humanly possible to take any plant and rebuild it twice and meet the same conditions, even if you know exactly what you are going to do, and had built this plant—just built it—and were going to build it over again, you would not meet the same conditions, because the proposition is in large part one dealing with the human element, as well as mathematics and physics. Therefore we always have to allow something for that which is unknown—can't be prophesied.

Q. Isn't it possible that you might have more favorable conditions than you anticipated?

A. That once in a while happens, but it surprises us so
156 when it does happen that we never forget it afterwards. Ninety-nine times out of a hundred it is the other way. You perhaps appreciate that if you ever built a house.

Q. You make the estimates as carefully as you can, and after you make that estimate you estimate that you have missed it so much?

A. Well, I wouldn't like to put it in that unpleasant phraseology. If it wasn't for the human element—if we were dealing with so many pounds of iron and brick, I think we could make closer estimates of what it would cost, but when you come to deal with contractors and laborers and accidents and all sorts of things which depend on the state of society around, we are dealing with something which we cannot absolutely prognosticate, and we find from experience that after we have figured all the known things, the things which we can definitely see, we have got to allow a margin for the unknown things which may come along—strikes, floods, hazardous foundations—things which we can't foresee.

Q. You figure that about 3 per cent?

A. I figure it is about 4 per cent. Usuallly, in any new work, I would take that at 8 or 10 per cent, but having a pretty definite plant before us, pretty fully described, I have cut that in half.

Q. Now, of course, if you had what you call the historical
157 value of this plant you could tell just exactly what the cost was without any contingency?

A. Oh, no, the books wouldn't show that at all. The contractor, like your house contractor, might have gone broke. The books wouldn't show that. The losses to the contractor are oftentimes a proper part of the costs of the plant. He can't be a very experienced contractor. That is part of the costs of the plant under those conditions.

Q. Assuming that you knew what the plant might have actually cost, whoever might have spent it, your element of contingencies would be eliminated?

A. Yes, you would know pretty well what it would have cost under the then existing conditions.

Q. You have an item of interest under construction, I believe you figured this plant would be under construction and you would be deriving no revenue from it for something like a year, and you figured the interest on the value of the physical properties during that time?

A. Yes, sir.

Q. As a matter of fact, most of the physical properties in this plant, the larger part of them, were put in while the plant was in operation and they were deriving revenue from it?

A. Yes, sir, of course, they derived no revenues from it during the time they were constructing it. Historically, they must
158 have lost some revenue on it during the time they were constructing it. That wouldn't show on the book.

Q. That wouldn't equal the interest on the whole cost of the plant for a year?

A. No. Still, I would think it would aggregate about as much as

if it had been built altogether. As a matter of fact, it is possible that a building built altogether, and hurried—hustled through—might be a little better off, as far as that is concerned.

Q. Suppose, though, that by putting in these separate units you required one month to put in one, we will say we would only be losing the interest on the money invested in that for one month. Isn't that true?

A. Yes.

Q. But if you take the plant as a whole you would be losing the interest on that for a whole year?

A. Yes, but every separate part would have its loss of interest, no matter what time it took to build it, just the same when it is all built together as if it had been built in piece-meal. The only difference is when you are building a plant altogether you get some parts built a little before they can be used, before other parts are built; and a prudent, skillful engineer tries to get his parts so built that they all come out about even for work.

Q. To illustrate what I was driving at, suppose this plant
159 was constructed in the beginning, and it cost $100,000, and it took a year to construct it and get it in operation, you would lose the interest on the $100,000?

A. You would only lose about half the interest; you wouldn't have the money all in the whole year.

Q. Well, whatever time you had it in?

A. Yes.

Q. Suppose you wanted to put in another tank that cost $50,000, and it would take a month to construct that tank.

A. Yes.

Q. You would only lose the interest for one month on that tank?

A. Yes, sir.

Q. If you lose the interest on the plant for $100,000 for a whole year, you would calculate for the whole year?

A. If I understand you, yes; but if that tank was built when the rest of the plant was built, it would still have gotten its one month's loss of interest. In other words, you can't change the definite time which it takes to construct a thing because it is all constructed together or constructed in piece-meal.

Q. What do you mean by the going concern value, Mr. Alvord, item 57?

A. Well, that is the cost of financing this property into the possession of its income.

Q. Then that is another sort of a brain item, in addition to the $46,000 that you talked about a while ago?

A. No, no, this is a real—this is the real thing; this is real expenditure. Brains—The going value is just as necessary to the in-
stallation of the property as the *h*ypes of the pumps, and if
160 it is neglected, or if anybody thinks they can wish it away, they generally have some very sad experiences. For instance, if this city had no plant here and were going to build its plant, it would have to wait till the plant was completed before it could even begin to take on consumers, and then it would have to gradually ac-

quire those consumers, at first those who were most prosperous and anxious for water, and later on those houses where they had other supplies and were not so anxious, and finally the outlying outskirts of the very poorer classes of people, who are very slow to acquire such facilities.

Q. Then that is the expense of procuring the business?

A. Well, it is the advantage which a plant which is already going—operating—and has its income has over one which has got to begin to install a physical property.

Q. Well, now, haven't you accounted for all of this when you have calculated interest on the money invested for the time it is under construction, and calculated for all these contingencies?

A. Now, we make an allowance for the interest in the going value, so that it doesn't come in twice.

Q. This is really not an expenditure of money at all?

A. Oh, yes, it is; it is an actual expenditure of cash. Not all of the advantage of this plant appears in cash, but it would appear in a concrete case, if you can imagine such a thing as the city
161 of Bluefield saying that they won't have the service of this plant any more, but they will build their own plant, they will actually lose any cash that this plant is deriving during the year that they were building their plant, and they would actually lose a portion of the revenues beyond that this plant is deriving from its consumers during the time they were building up their business, and that would be an actual cash loss.

Q. But they wouldn't be paying out any money?

A. Yes, but it would be a loss just the same.

Q. That is calculated to represent the money which they didn't get which they might have gotten if something else had happened?

A. Yes; it is an advantage which a going property has over one that has got to be reproduced.

Judge Sanders:

Q. And that goes in to make up the value?

A. Yes, sir, like any other reproduction. You have got to reproduce the business as well as the physical property.

Judge Ritz:

Q. Mr. Alvord, reverting to the item of preliminary costs that we talked about this morning, you based your estimates of preliminary cost of $15,000 on 3 per cent of the amount invested?

A. Yes, sir.

Q. Does the question of preliminary cost have any relation to the value of the plant, necessarily?

A. Well, it doesn't vary directly as the cost of the plant, and we don't always use the same percentage, for that reason. In a
162 small plant the preliminary expenses are rather larger in proportion to the physical property than they are in larger plants; but in some kinds of utility they are greater in proportion than they are in other kinds of utility. I have used 2½ per cent

quite frequently in larger plants than this, and my reason for using the 3 per cent in this plant is that it is relatively a small plant, and the cost of getting it into contractual relations, and in addition to that the difficulties of properly determining how you shall supply a meet those contractual relations, are, in my opinion, unusually large in this plant.

Q. And that accounts for this large amount which you have allowed for that?

A. Yes, sir.

Q. Do you think, Mr. Alvord, that it would be reasonable for a man or any set of men to spend $15,000 to determine the advisability of constructing a water plant in a city the size of Bluefield and in procuring the franchise for it?

A. Well, I admit that they are under a hazard in making that expenditure up to the time that they get into contractual relations, and many times they lose a great deal of their expenditure because they never succeed in acquiring the contractual relations which will justify it. That is one of the hazards of the business.

Q. Do you think in the case we have here, with these mountains and springs from which this water supply is taken, that there would be any necessity for expending money for expert engineer-

163 ing advice?

A. I do.

Q. In advance of obtaining the franchise?

A. Yes, sir. I am advising the present company, if this proceeding results in proper return, to make a very exhaustive and thorough engineering investigation as to four or five different possible sources of water supply—an investigation that will be accompanied with surveys and tests, and will, as far as possible, reduce all guessing to a minimum, so that they can see what is the best direction to increase the further capital that must be expended for the water supply to Bluefield.

Q. That wouldn't be necessarily so when those additional supplies were not required for the water supply of the city?

A. I understand, but it is necessary to do it now.

Q. It is necessary to do it now when the needs of the city have grown beyond the present supply?

A. Yes, sir.

Q. But was that necessary thirty years ago?

A. Yes, sir. It is my understanding that it was actually done; that they had a very good engineer that reported on the whole subject, even when they first considered the gravity springs, when it seemed a very small matter.

Q. Did he spend $5,000 in doing that?

A. I don't know.

Q. Mr. Alvord, I believe you stated that with this project of impounding water on Bluestone you would provide an 18-inch main from this reservoir to the twin tanks?

164 A. It is 16. That was my recollection.

Q. What would be the capacity of a 16-inch pipe?

A. Well, the best of my recollection is that that was figured to

take 2,000,000 gallons four miles away with a reasonable loss of head——

Q. Well, the capacity of the pipe would be very much more than that, wouldn't it?

A. Not with a reasonable loss of head.

Q. What do you mean by a reasonable loss of head?

A. Well, you have to pump the water up a certain height, which is all lost, due to the friction inside of the pipe itself, and one of your economic objects is to keep your pipe of such a size that your operating expenses are not unduly increased by excessive friction losses; and while a smaller pipe than that would carry the water, it would carry it at such an excessive friction loss that your annual cost of operation would be excessive and wasteful.

Q. Well now, how much water would you expect, under the conditions that exist here, to carry through that pipe?

A. Why, at all ordinary times, and in the first years of the addition, you might be carrying, for the domestic supply alone, possibly a half a million gallons in addition to the other supply, up to a million gallons at such times as the other supplies were at a low ebb. Should there be any conflagration, however, you would expect to put through a very considerably greater quantity,
165 depending on the call of the fire department for water for the extinguishment of fire.

Q. So far as domestic service is concerned, then, a pipe very much smaller than that would answer the purpose?

A. Oh, yes, sir, a very *small* smaller water works than this would answer if we only had the domestic service to consider.

I might say here that I think the people of Bluefield would use more water if the mains were extended and additional takers were taken on, which should be taken on, and that with the acquisition of a source like this I believe that the amount delivered would materially increase.

Q. Consequently, the revenues of the company would increase?

A. Yes, sir, the revenues would increase, unquestionably.

Q. If all of the inhabitants of the city were supplied with water now, the revenues of the company would be substantially greater?

A. There can't be any question about that.

Q. Mr. Alvord, you spoke this morning about the capacity of the Ada spring at its minimum. The maximum capacity of this spring is very much more than that, isn't it?

A. Oh, it is a tremendous amount gr-ater.

Q. Ten times as much, isn't it?

A. I should say yes, so I am informed; it comes out there like a torrent.

Q. Why, with the dams and impounding places already
166 provided, could not excess water be impounded at the Ada springs and kept there for such emergencies?

A. That is just what the company proposed to do, and the city refused to let them. They built that reservoir down there to impound the surplus waters of that stream and hold it for use, and the city objected to that.

Q. That was without filtration?

A. Yes, sir.

Q. Why couldn't that be provided with a filtration plant such as you propose on Bluestone and meet all reasonable requirements for the next twenty-five years?

A. Well, it could be provided with filtration, but it would not meet all the requirements for the next twenty-five years. In the first place, there was a good deal of difficulty found in impounding water just at that site. There is a limestone formation there, and it wasn't easily retained. In the second place, there is not the opportunity for storage there to carry a considerable quantity of the wet season water over to the dry season; and as for filtration, I feel sure that the Ada springs water, in time, will have to be filtered in any event.

Q. So that with the present plant they have got and the additional filtration plant, which will have to come in any event, they could impound that excess water down there and keep it for dry times?

A. They could undoubtedly impound some water down there.

Q. Well, if the maximum capacity of that spring is ten
167 times its minimum capacity, you could impound plenty of water there in wet weather?

A. No, you can't impound more water than you have square miles of water shed. We only have a few square miles of water shed there, I don't think more than two, maybe one and a half. On Bluestone we have seventeen. You can't get water enough onto the watershed of Ada springs to produce 2,000,000 gallons a day from the surplus waters.

Q. Couldn't you buy more land?

A. Well, God's rain doesn't fall on more land. It only falls on this land from the top of East River Mountain down to the spring. Of course, we don't know precisely where those limits are, but they are not very extensive. We know approximately.

Q. Your idea is that the amount of water that comes out of that spring is controlled by the amount of land over it?

A. Yes, sir, the amount of land that collects in that spring per square mile.

Q. Well, how much water could be impounded from that shed?

A. Well, it would be very hard to say, without going into it carefully. Possibly a half a million gallons.

Q. You mean that a half a million gallons would be all the——

A. No; I mean enough water to supply half a million gallons a day during the dry season.

Q. Yes. In addition to the regular minimum supply?

A. Yes. Now, that is a pure guess. I haven't any date to establish that on.

168 Judge Ritz: Unless we have omitted something, that is all. We may want to recall Mr. Alvord.

The Witness: I would like to present, as well as that paper on hydrant rentals and apportionment, the other paper in which I have analyzed this question of the cost of cutting through pavements.

Judge Sanders: Well, I would be glad if you would file that as a part of your evidence, marked in some way to identify it.

The Witness: It is called, "The Appellate Court of New York and the Question of Paving over Mains," and I have taken the opinion of the Appellate Court of New York and discussed it.

Judge Sanders: Will you please file this paper, then, marked, "Discussion of the Opinion of the Appellate Court"?

The Witness: I will.

NOTE.—The paper referred to was later filed as evidence, marked as requested, and is hereto appended.

Judge Ritz:

Q. Did you refer the opinion of the Supreme Court of the United States?

A. No. The Appellate Court of New York, in the Kings County Lighting case, within a few days delivered an opinion on the paving question as well, in which they got mixed up between present cost and past cost; and they delivered themselves of an opinion, which enabled me to see just how they reasoned, and it was very clear that they were thinking about past cost and talking about
169 reproduction cost, and I tried to point that out in this paper.

Judge Sanders:

Q. Have you made a discussion of the opinion that you refer to of the United States Supreme Court?

A. No, sir.

Q. It is of the New York Supreme Court?

A. It is the same question, of course.

Q. But your discussion is of the opinion of the New York Supreme Court?

A. New York Appellate Court.

Q. New York Appellate Court. Well, will you file this discussion of yours, marked "Discussion of the Opinion of the Appellate Court"?

A. Yes.

Redirect examination.

Judge Sanders:

Q. Mr. Alvord, speaking of impounding the water in East River spring, you say you could impound half a million gallons. You mean yearly?

A. That I could impound enough water—It is possible that an investigation might disclose that you could impound enough water to add perhaps a half a million gallons a day to the dry weather flow of that spring, but I won't be sure on that without a more detailed investigation.

Q. Well, what would be the cost of making this impounding?

A. Well, I think it would be very great, because I think that is a

limestone country up there, and it is going to be very difficult to get a tight reservoir.

Q. Could you give us an approximation of the cost?

170 A. No, I could not. I haven't got in my mind whether there is reservoir capacity up there enough in those abrupt hills to do it anyway. That is one of the things, however, which I believe should be looked into and exhaustively investigated, what can be done to add to the present sources of supply. That doesn't look, from the study I have made of it, that you will get near as much from your money from that as you will to go to Bluestone. Now, a detailed investigation might prove that I am not right about that, but that detailed investigation ought to be made.

Q. You say that it will be necessary to in-tall a purifying filtration system if this water should be impounded. What would be the cost of this filtration system?

A. Well, it would cost about twenty or twenty-five thousand dollars.

Q. You further say that your opinion is that within a *year* years it will be necessary to filter the water from East River spring?

A. Ada.

Q. How much would that system cost?

A. The Ada spring?

Q. Yes, Ada spring instead of East River spring.

A. Well, I had that in mind, but to put a filter plant up there at all you would want to filter all of that water, I think.

Q. Well, independently of the question of impounding the

171 water, suppose you wanted to install a system to filter the water from Ada spring, what would that system cost, not taking into account the filtration of the water impounded?

A. Well, I should think possibly it would be wise to install filtration there up to a million and a half, perhaps two million gallons.

Q. Daily?

A. Daily, yes. Because the highest demands for fire protection must be filtered, of course, as well as the domestic supply.

Q. You have been interrogated as to the capacity of these various springs, of which you have given an approximation, I believe. In some instance maybe you have given it by actual measurement, have you?

A. Yes, sir, my assistant, Mr. Luce, has actually measured all of the springs.

Q. That is as to the minimum and average quantities, not as to the maximum?

A. Well, as to the minimum particularly. He couldn't determine the average with very great accuracy, and couldn't determine the maximum at all.

Q. Yes, that is what I understood. Now, in making these measurements and calculations, it was of the entire flow from the springs, and did not take into consideration the rights of lower riparian owners? What I mean to say is, your calculation wasn't predicated on the amount of water that the company would be permitted to take

172 from these springs, but, on the other hand, it gave the actual flow of water?

A. Yes, sir. Many springs have a reservation on the part of some owner lower down for a certain amount of water out of the spring.

Q. Now, the Beaver Pond spring, which I believe is the largest spring, the company is only permitted to acquire from that spring the surplus water? Isn't that true?

A. Yes, sir.

Q. Under the decision of the United States District Court and the Circuit Court of Appeals?

A. So I am informed; yes, sir.

Q. And what that surplus water will be, do you know?

A. No, I couldn't say at this time.

Q. And that can't be ascertained, can it?

A. No, sir.

Q. Because it depends on the development and the uses of the lower riparian owners, doesn't it?

A. Well, it would require a long series of measurements, extending over a period of years, to determine what that was.

Q. And, of course, it would require the permission of the lower riparian owners?

A. Yes, sir.

Q. In the acquisition of this Beaver Pond spring the company spent a large sum of money in litigation, didn't it?

A. I believe it did.

Q. You don't know, however, that amount?

A. No.

Q. Speaking of the going value which you have estimated,
173 you and Mr. Miller are nearly together on that sum, aren't you?

A. Yes, sir. Almost precisely together.

Q. How is that?

A. We are almost precisely together.

Q. Do you know the exact difference between your and his figures for that item?

A. Well, it is too close to be true (laughing). I mean to say by that that it is closer than the data would warrant. The data doesn't warrant such real exactness in our——

Q. Of course, the reports will show, but I——

A. Mr. Miller's is $16,302 and mine is $16,328. Well, if we had agreed within five or eight hundred dollars I would consider that that was as close as the data upon which the computations are made would really warrant.

Q. I believe you stated that in estimating the preliminary cost you did not include any sum for the acquiring of the franchise?

A. No, sir, no sum as a value of the franchise per se.

Q. That is what I mean. The franchise, or right to furnish the city with water, taken at the time when it was, would very materially differ in value with what it would cost today, wouldn't it?

A. I should think so; yes, sir. It is usually the case that a franchise in a large town is more strictly guarded and less liberal than a franchise—early franchise in some of these very small places.

Q. Well, at the time this franchise was acquired, I believe,
174 was probably in 1890, or probably would be in 1891, or about that time. The population of Bluefield was very small at that time?

A. It must have been.

Q. It is now about 15,000—so estimated, isn't it?

A. Yes, sir.

Q. Of course, you don't know what would be the value of the franchise today?

A. No, sir, I wouldn't—I wouldn't quite know how to go into that in West Virginia without looking up some of your laws and precedents. In other states where utility commissions regulate a fair return, we don't consider that the franchise has any value in itself, because the return is to be predicated upon the property used and useful, and there is no real surplus of earnings left to predicate any franchise value on.

Q. And therefore, in estimating your values, you have not included the franchise as of any value per se?

A. No, sir.

Commissioner Northcott:

Q. Mr. Alvord, in your opinion is it a fair item of value to be taken into consideration for rate making purposes?

A. I don't think so. The franchise, of course, is an absolutely necessary prerequisite to contractual relation, but all the contractual relations are predicated on the cost of the services and the need of the supply and a fair return for serving the supply; and there is nothing left in our modern conception of utility regulation which
175 could be applicable to a return on a franchise value, even if you found there was a franchise value. Some States in which I have valued properties have, for some reason or other, exceptions to that rule, but very few. In Mississippi there is an exception to that rule that I don't quite understand legally, but which permits you to value a franchise.

Q. Have they a state commission, public utilities or public service commission in Mississippi?

A. No, sir. I have never been particularly interested to look up the legal reason for that, but there are two United States Supreme Court decisions, I understand, in the Vicksburg case in which that point was settled for that state; but almost all of the other states—every one of them, as I recall it—the law is such that utility commission regulation reduces the return to the property used and useful.

Q. In your opinion, Mr. Alvord, is there, or can there be, or should there be, more than one standard of value, for instance, a standard for rate making purposes and a standard for condemnation or sale purpose, or any other purpose?

A. I can't conceive of there being, for any independent purpose of that kind, more than one standard of value.

Q. How about the standard for taxation?

A. Well, there may be a difference there, because the law
176 prescribes that it shall be a fair cash value, and that at once creates a condition which predicates, I suppose, a more or less forced sale, and therefore reduces it down to a sort of a junk value, if I might add it, but that is fully due to the fact that the law steps in and predicates something on which your value must be taken into consideration.

Q. Isn't your estimate in this case upon a fair cash value of the cost of reproduction?

A. Well, not in the sense of selling out the physical property as so much physical property. My value is predicated upon its being a going, working whole, and having a relation to the future need, and not subject to immediate sale

Q. What leads you to believe, Mr. Alvord, that the fair cash value fixed by law in West Virginia for taxation purposes is synonymous or means the same thing as a forced sale value?

A. Well, I don't know anything about West Virginia law. I only know that in some other states, my own, for instance, there is a description of the value for property which I have been informed contemplates that kind of a value; and when the assessor comes around he will assess my household property, for instance, he puts on what I would call a forced sale value, a sort of a junk value. I never object to it. I wouldn't sell my property for that, because it is useful to me, but that is the scale upon which he assesses all household property in my neighborhood.

177 Q. Presuming that the law in West Virginia is that there shall be a fair and actual value fixed for taxation purposes, in your opinion, then, should there be any difference between the taxation value and the rate making value?

A. No, not if the law doesn't limit that in any way, simply points out that the fair value of the property should be found; and I would consider that that stood in the same category as value for rates, value for sale, value for taxation, or any other purpose. And my thought is this, that if the property is, by any stretch of the imagination, worth one thing for sale and another thing for the making of rates, which is going to be the higher value of the two. The lower value will be the value at which the buyer wants to buy; and it is inconceivable that a property could pass, or its value could be reckoned, as one value at one time and another value at the same time. I can see how values can be made greater or made less by loss at different times—operating at different times—but I can't see how any property, whether it is for rate making purposes or for sale, can have two different values at the same time.

Q. Well, is it or is it not true that the courts are making a distinction in that respect, as far as rate making values are considered?

A. As far as I have studied the decisions, I don't think they
178 have. I think that what has led to a little misconception on that point is this: In rate cases the courts are endeavoring to determine whether property has been confiscated. There are not interested in the true value so much as they are interested in

determining whether there has been confiscation; therefore, in a good many cases, they have determined what they call the least value, or the minimum value, which would tell them whether there was any possibility of confiscation. In condemnation cases, or in cases for transfer, the court doesn't look at it that way. The law looks at it as finding the fair value as between a willing seller and a willing buyer. There is the little point which I think has led some people to think that there have been two values at the same time. I don't think that the truth warrants thinking that.

Q. Well, is it or is it not true that a number of commissions have held that there should be a different standard of value for different purposes?

A. Well, we have all kinds of opinions from these new commissions, and some of it is good and some of it I don't think it is.

Q. You are familiar with some opinions that do hold that, aren't you?

A. How is that?

Commissioner Northcott: Read the question. (Read.)

A. Yes, I think I recall a number of cases where commissions have taken that stand.

Judge Sanders.

Q. What do you mean, that they have adopted two different standards of value?

179 A. They specify that for rate making purposes their values will be so and so.

Commissioner Northcott: And certain items are not allowed for rate making purposes that might be allowed for other purposes.

The Witness: Yes, sir.

Judge Sanders:

Q. Now, Mr. Alvord, for tax purposes would you or not be controlled in determining the value of the property by the returns the property yields?

A. Well, I might. I take into consideration——

Q. Well, would that not necessarily be one of the things which determined the value of the property?

A. Yes, as far as the returns——

Q. The net returns?

A. The net returns, as far as they work into going value, affect slightly the value of the property. If the return is not at all commensurate, it may affect the value a good deal. A property, however, which is having a normal return, part of the value is the value predicated upon that return—a small part of it.

Q. Well, as a sale value, doesn't the question of returns from the property enter very largely into it?

A. It does as between an independent seller, who is merely looking at it as an investment, and is not trying to analyze its true value in relation to the needs of the community.

Q. Well, assuming now that the returns to this company
180 on the property that is invoiced here is only 3 to 4 per cent, what would you consider the value of this property as compared with its value if the rate was increased to eight or ten per cent?

A. Well,—From the standpoint, you mean, of an individual buyer.

Q. The sale value of the property and the taxable value of it?

A. The value of the property is really predicated on what the commission is going to allow it to earn in the future.

Q. That is what I am trying to get at.

A. If the commission, for instance, wouldn't allow it to earn anything, the property is not worth anything.

Q. It is worth nothing as a selling proposition?

A. Yes. And the commissions, of course, are analyzing this whole proposition on what the value of the property is in relation to the needs of the community for its service, and they find a value predicated upon that need and the cost of supplying it and to adjust a fair return. Now, as far as an individual buyer's coming along who wants to invest his money in a paying institution, his point of view is wholly at the mercy of what the commission will do. If he finds a property in which the commission have not allowed very much of a return, why he won't buy the property; if he finds they have allowed a fair return, he probably may invest in that property; if he finds they have been liberal, he will be glad to invest in that property.

181 Q. Well, assuming that you had purchased this property at a cost of $500,000, and assuming further that it was paying you 3½ per cent annually, would you list it for taxation at $500,000?

A. No, no; and I wouldn't buy it as an investor for $500,000; but if I found on analysis that the city needed it, and if it didn't have this particular property it would have to build one just like it for $500,000, I would say the property was worth to the city, either for need or for sale, $500,000, and the commission ought to recognize that fact.

Q. Then, as I say, the valuing of this property for sale or for the purposes of taxation would depend largely on the earnings of the property, wouldn't it?

A. Yes, sir.

Q. And, of course, that would depend largely on what the commission allows for fixed rates?

A. Yes, sir.

Commissioner Northcott:

Q. Then, if you were valuing this property for taxation, as I understand you, you would take its earning capacity?

A. Well, I would take its present condition; and as far as the investor is concerned at the present time it is a poor investment——

Q. I don't think you caught my question. I am talking about taxing values.

A. Well, for taxing values I am not particularly familiar with the Virginia law on that.

Q. Well, I just understood you to say that if it cost $500,000 and was earning 3½ per cent you would not return
182 it at $500,000 for taxation purposes?

A. No, I don't think I could.

Q. Then you would measure its value for taxation purposes by its net return?

A. To a large extent.

Q. But in fixing it for rate making values you would use the reproduction-new-less-depreciation value?

A. Well, when I make the reproduction value I come to the proposition of the value of that property——

Q. I know, but the yard stick you would use is the reproduction value?

A. Yes, sir.

Q. Then you think there ought to be two yard sticks, one for taxation purposes and one for rate making purposes?

A. Well, I can't say that precisely either, because in my opinion, if there is no reason why the law does discriminate, I don't think anybody else ought to discriminate; and the commission ought to adjust that rate so that it is just and fair, and the taxation, if there is nothing to prevent, ought to be based on that. Of course, this whole question of taxation is taking money out of one pocket and putting it into another.

Q. The whole question I am trying to get at, is, if only one value, why two yard sticks to measure it with?

A. Well, there shouldn't be, only the condition that this property is only earning three or four per cent now, supposedly suggested by Judge Sanders, is, in my opinion, a temporary condition,
183 and should be adjusted, and does not really affect the intrinsic value.

Q. Then why shouldn't you return it at its intrinsic value for taxation purposes, if the law says it shall be assessed at its actual value?

A. I believe it ought to be but for the reason that we have no assurance, till the commission acts, that the value will be what it ought to be.

Q. If a man has a very fine thoroughbred race horse that cost a thousand dollars that he keeps for pleasure purposes, and he has a draft horse that cost a hundred dollars, and that horse earns him $4 a day, would you measure the value of those horses by their returns?

A. I would, because the money he is investing in the race horse is for the pleasure he is getting out of it.

Q. Then, if there is value in this plant, or should be, because the application has not been made for authority to charge a rate which would give a proper return, should that affect the taxation value, if that value is there?

A. Well, I don't know that it should, except that we have a situation that the city is getting something for nothing, the value is not expressed in the return that is being made, and the investors are obliged to invest their own capital to make good depreciation as well. Now, apparently an injustice is being done, and the property is not expressing itself in the fair return that it ought to have, because, as I reason it out, the community needs this property, must have its services, and would have to reduplicate it if it did not exist.
184 It may be that temporarily that value is not expressed, is not within grasp, but the intrinsic value which rests in the needs of this community is there, and must make, in any relation between the invester and the community, must govern the determination of the true intrinsic value.

Q. As to rate making purposes?

A. Yes, sir, or sale purposes.

Q. How about taxation purposes?

A. Well, I think that is there for taxation purposes, theoretically.

Commissioner Northcott: Pardon me, Judge. Go ahead.

Judge Sanders: That is all right.

Mr. Fox:

Q. Mr. Alvord, will this property, at the present rate charged for water, ever, by the increase of new subscribers, get an adequate return on their property?

A. I think it will be a very long, long race, because they can't get additional revenue without getting additional water; and they have got to the point now where they can't, in my opinion, as I see it now, get additional water without making a jump to some considerably distant and expensive source of supply; so that they are in position where just as soon as they almost get up to paying on the present property they have got to invest for the future again and they are put away back in the race; and I don't see any prospect of their catching up, because this is a peculiarly
185 difficult situation; this is a specially difficult place to provide with water, and water is going to cost this population probably twice as much as the average cost of water in the United States. The water around this -ummit is going to have very much more value as time goes on, even the water impounded in wet weather.

Q. Then additional subscribers will necessitate the outlay of additional capital?

A. Yes, sir, and a very great investment just at this time.

Q. Well, is the present rate of return sufficient to induce capital in the outlay necessary to create these improvements?

A. Not at all. It would turn it away. An examination, even of the valuation put on by my friend Mr. Miller, would turn capital away from this enterprise as an investing proposition.

Q. We have made reference here before to the sale and market value of bonds. Would bonds under the present rate be an attractive proposition to capital under any circumstances at the present rate?

A. No, sir. The only possible sale for such securities would be the

feeling on the part of the investor that the Public Service Commission of this state will come to the rescue of this property, the knowledge that it has got to be either perpetuated and preserved or it will go to ruin.

Judge Sanders:

Q. You have described, in a general way, the reasons for
186 the increased value of water at this point as compared with other towns and cities. I wish you would explain that more in detail.

A. Well, it arises from the elevation of Bluefield on this divide, the highest point—highest railroad point, anywhere around here. In fact, the more water you need the further and the lower down you have got to go after it. Also the fact that in this limestone country it is very difficult to impound it, very difficult to develop it, and it naturally seeks a lower level through the crevices and gets away from you. Then the pollution problem has to be dealt with. That complicates the situation. The pollution of Bluefield, the pollution of Graham, the necessity for emptying the pollution in some form into these rivers, either treated or untreated, makes it more difficult. What should be done in this state, as well as in a great many other states, there should be a conservation commission for these natural waters, because they are going, in time, to be very, very valuable, sewage disposal as well as water supply, and they have got to be first conserved for the benefit of the public; and in this district, as I see it, the public are going to need all the water that can be found around here within a reasonable distance within the very near future.

Q. Judge Ritz, in his examination, asked you that if it became necessary to impound the water on the Bluestone, and the
187 company did that, whether or not it would be necessary to continue the expense of bringing the water from the various springs referred to.

A. Well, certainly——

Q. I don't know that I understand fully your explanation of that matter, and I would like for you to explain it.

A. Certainly the gravity springs are always going to be the most valuable of any water, due to their elevation and their nearness to the population. The Ada springs could be developed to a greater value, perhaps, than they have now by being led to town, in part by gravity and in part by pumping, not flowing down into the Ada pumping station and then pumping up again. At present that appears to be more expensive than is necessary. The great spring at Ada is always going to be valuable, and increasingly so, due to the general growing use of water. Whether it will have a greater value than the Bluestone or a less value than the Bluestone it is probably difficult to say at this time without a more exhaustive investigation; but my feeling is that it is not depreciated by the possibilities of getting Bluestone water, for we have in the Ada development conditions a completed development; we know all about it; we know just what it costs to run it, and what the difficulties are to overcome; and when we come to

compare that with a projected development on the Bluestone we are as yet dealing with a project in which probably the con-
188 tingencies may not be already provided for; so I feel that the water is worth now what it cost, the city certainly needing it, and they need more than is at present available, and that it is the important problem now to settle as to where is the next best available source to add to what we have already got. I wouldn't be in position to answer that question with finality and with certainty until I had made an exhaustive study and report on all of the available sources of supply and the cost of development. I have only taken the Bluestone because as far as I can see from a preliminary standpoint that appears to me to be the most available, and it is at least the one in which we can know something about what we have to do to develop.

Judge Sanders: Well, that is all.

Commissioner Northcott:

Q. Mr. Alvord, in your opinion, would the Commission be justified, in fixing the rate of return which this company is entitled to earn upon the property used for the public service, in taking into consideration prospective moneys that might have to be expended in making improvements in advance of the expenditure of such money?

A. Yes. If I were——

Judge Sanders: Do I understand you to say to meet present demands?

Commissioner Northcott: No, money that may be expended in the future.

189 Judge Sanders: To meet future development?

Commissioner Northcott: Yes.

A. A commission, or permanent regulating body, has this advantage over a court in such matters, that they can continually exercise a watchful guardianship over matters which they settle. Now, to be very frank, if I were to indicate what I thought to be desirable procedure here, it would be to recognize the present property rather liberally with a rate which will certainly compensate what has been invested here properly for water supply, and then direct, if the commission finds that this city is not fully supplied with water, that it proceed to the investigation of other sources of supply and adopt one, which, in the opinion of the commission, after careful engineering investigation, will be practicable, and then await such future action as the commission see fit to take, the commission only looking at it from the standpoint of protecting the public's interest in seeing that adequate and careful steps are taken to increase the supply. Then, when the procedure has been outlined and the additional capital necessary is known finally, the commission, in the future, can take such action on petition or otherwise as will meet the additional investment necessary. In other words, we don't have to guess now what that future investment will have to be.

Q. Have you ever known of a commission that did allow
190 a return upon a prospective investment in the future?

A. Why, it seems to me I recall several cases where commissions have found certain things had to be done and have allowed on it. I myself was on a commission of three members at Freeport which was charged with the duty of finding what had to be done to bring the plant up to proper capacity, what the proper rates ought to be on that capacity, and giving the city the privilege of either buying the plant in its present condition, or extending its franchise under those rates which we determine. Now, that presented pretty much every question to us which had to be settled. We determined the amount that we thought the owners of the plant ought to expend to rehabilitate that property. We then determined the rates which would support that increased investment, and in so doing we also determined the value at which the city might purchase immediately, if they so desired, and the city had the option either to purchase or to continue at those rates, and the company was under the obligation, if it was granted the continuance of the franchise, of putting in those improvements, which were specified in detail.

Q. Did you allow the rate to go into effect before the improvements were made?

A. Yes, sir.

Q. At once?

A. The improvements were all such that they could be put in in one season, and the rates could be changed as soon as the city decided to extend the franchise. The rates were subject to revision
191 every five years.

Q. What would have been done if the company had extended its rates and the improvements hadn't been made?

A. The company wouldn't have lived up to the obligation, and the city wouldn't have had to pay the increased rates.

Q. How about the consumer, paying monthly?

A. Well, in that case we raised most of the increased rates from the city for improved fire protection.

Q. In your opinion, then, that is good practice, to allow rates upon prospective expenditure?

A. With the contractual relation, or, in this case, the order of the commission, that such improvements should be made.

Q. You think the commission is in position upon the data that has been presented to order any particular, specific action to be taken?

A. No, I think they are only in position to order that a proper investigation be made which shall determine—Now, such procedure as that has been taken quite often by commissions. Several cases in which we have been making an investigation lately, the investigation was directly on the order of the commission. The Indiana commission recently order- the the East Chicago plant to investigate and report to them the cost of a filtration plant and the rates necessary to support it, which we have done for them.

Q. Then, as I understand you, and in order that I may
192 not misunderstand you, the commission could not, upon the data presented in this case, base its action as to rates upon a prospective expenditure that may have to be made by this company to secure an additional supply?

A. No, I wouldn't suggest that, because that looks into the future I should think at least two years. It will be a question of two years, in my opinion, to make the investigation to decide what shall be done here, and to build the necessary works to add an abundant supply to this city, and I think that is ample time for the matter to be turned over again. The commission can find the value of the property at this time; they can adjust, if they find it necessary to do so, the rate liberally to the property now existing, and they can order—place an order that it seems to them to be apparent additional supplies are need. I think they would be justified in that. I think there will be further evidence presented here along that line. In fact, I may say, without violating any confidence, that one of the first things in this matter that came to me was a proposition to make this investigation; and I myself suggested that it be postponed until the attitude of the commission and the public could be ascertained, and on the basis of the new capital within the next two years the commission could review their finding and the additional expenditure and the necessary, proper supporting rate. In other words, you are not limited, as is a court, to just what is on this one
193 case before you, but you have a continuing opportunity to act in *adjustment* the investment to the needs of the community.

Commissioner Northcott: That is all.

Judge Sanders:

Q. Well, Mr. Alvord, what about a condition, if such exists, that the company is not now situated so as to furnish an adequate water supply?

A. Well——

Q. Existing conditions is what I mean, not conditions that arise in the future, prospective, problematical questions, but assuming that the questions are today such that the company is not so equipped as to furnish an adequate water supply to the city.

A. Well, I think such conditions already exist.

Q. Well, I say now, assuming that condition to exist, what would you say ought to be done?

A. Well, I am very sure that permanent improvements, such as I have suggested, must be made, or, if they are not made very promptly, temporary and more expensive expedients must be adopted which will tide this community over certain dry seasons all right that are apt to occur, that have been found to be embarrassing, and of the two courses of course I believe in more thorough investigation and the adoption of more permanent means of meeting this demand.

Q. Well, assuming that the company hasn't the money to do it

with, and assuming that the returns on the capital invested
194 are not enough to enable them to make sale of bonds for the purpose of raising the money, and will not enable them to raise it in any other way——

A. That is the reason why I suggest, in putting the rate on the present value, the commission will do well to make it rather liberal than otherwise, in view of the fact that still further and large investments must be made, and the subject must be further reviewed.

Q. Don't you feel that if it could be shown at present a certain amount of money must be expended in order to meet the present demands of the city, that that ought to be taken into consideration in fixing the rates?

A. Yes, I think that would be entirely practicable. Some sum which would represent the nearest piece meal addition to the supply might not be improperly taken into consideration.

Q. Well, what could you say about a sliding scale—an ascending sliding scale in regard to regulating the amount that should be paid for fire protection as compared with the amount paid by the consumer. I noted that you referred to a sliding scale in your answer to Mr. Northcott's question there a while ago.

A. Well, my feeling would be that you can't violently change the public payment for fire protection without very seriously embarrassing the authorities in the financial condition of this city,
195 and that it is wise to do that gradually, so that they may gradually adjust themselves to it; and in this Freeport case, where we had the same problem in hand, we adjusted it in five year ascending amounts each year, so that at the end of the five years the city would be paying much more nearly the proportion than they had been.

Q. You mean that you increased the amount that the city was to pay for fire protection each year?

A. Each year until they had gotten it up to a percentage which we felt was more nearly just.

Commissioner Northcott:

Q. In that case, did you make them pay their full percentage?

Judge Sanders:

Q. At the end of the five years.

A. I don't think I did. I think we got as near to it as we could; we felt we couldn't reach the theoretical proposition, but we got so much nearer to it than they had been paying that it certain- did equalize the adjustment to a very large extent.

Recross-examination:

Judge Ritz:

Q. Mr. Alvord, you are familiar with the receipts of the plant here, are you not, from water rates?

A. Yes, sir, I have tables showing the——

Q. I believe you stated the gross receipts of this company were about $40,000?
A. They were for that year.

Judge Sanders:

Q. What year was that?
A. That was 1914.

196 Judge Ritz:

Q. What, in your judgment, should have been the gross receipts for that year in order to yield the company a fair return on the capital invested?
A. I think you are placing me in the attitude of the court.
Q. I just want to get your idea of it. I don't propose to be bound by it at all.
A. On the theory that I have just expressed, that this company is facing a very large expenditure, I certainly would not place the fair return at less than 8 per cent just at this time, with 1 per cent additional for depreciation.

Judge Sanders:

Q. You mean 8 per cent net?
A. Eight per cent net.
Q. Profit to the company?
A. Yes.

Judge Ritz:

Q. In addition to the operating expenses?
A. Yes.

Judge Sanders:

Q. And then I believe you say you would add to that 1 per cent for depreciation?
A. Yes, sir.
Q. Which would make 9 per cent?
A. Yes, sir.

Judge Ritz:

Q. Well, that 1 per cent, that is to amortize the plant at the end of a hundred years?
A. Yes, sir.
Q. Well, what would that amount to, Mr. Alvord?
A. Pretty near double the present rates.
Q. You would have to have about $80,000?
A. Yes, sir.
197 Q. (Continuing:) You think, to do that?
A. Yes, sir. And I should hope, really, that the company could on that proceed to develop additional supply, increase the fire

protection, extend the mains, and that after all those expenditures were made the increase in consumption would carry them still to a reasonable return.

Q. Well now, you estimate, or your opinion is, that this company ought to be allowed to have a rate that would double its present gross receipts?

A. Yes, sir.

Q. You are familiar with the rates charged consumers by the company, are you not?

A. Yes, sir.

Q. I wish you would give your opinion as to how those rates should be affected by this proposed increase.

A. Well, that is a very large study by itself. I couldn't express that opinion off hand; I would make the greatest portion of the rate—I would make all that I could in the raise on the sliding scale against the city proper for the fire protection in the next few years. Then I would adjust the remainder of the money to be raised not equally among the rest of the consumers, but in such a way as to spare, if possible, the smallest consumer—the class of people that are needy—and perhaps to tax the more wealthy classes and the business classes and the manufacturing classes the difference.

Q. You would be an anarchist?

A. Oh, I am on rates; yes, quite an anarchist. That has
198 been generally done everywhere where I adjusted a rate. We have always eased it up on the needy and made up the difference on the well-to-do.

Q. Mr. Alvord, you understand that this company has a minimum charge to each of its consumers—that is, for domestic purposes?

A. Yes, sir.

Q. Would, in your opinion, this increase in rates involve a raising of that minimum charge?

A. Yes, I think it ought to. In most cases. There might be—there might be a meter minimum rate which was different from the flat minimum rate, but the whole proposition is best studied by classifying all of the present consumers——

Q. Assuming that the minimum meter rate is 75 cents a month, isn't it a fact that most of the consumers that you class as the poorer consumers are affected by that minimum rate—that is, pay that minimum rate instead of paying by the meter?

A. I think they are.

Q. And they would be cared for by changing the minimum rate?

A. Yes. You understand we have got just so much money to apportion. Our problem is how to apportion that justly, so that everybody can bear the burden equally. We can best do that by taking all the consumers, dividing them into classes, finding the approximate amount of water they use, and apportioning the cost of that water in such a way that we can raise the whole amount, and at the same time apportion the burden to the ability to bear it.

199 Q. What is your opinion as to the rates charged by this company to large consumers of water, manufacturing plants, such as that?

A. I don't recall just at this minute what they are; I don't remember that I know any particularly low rate.

Q. What is your rate to the Matz Hotel?

Mr. William McCarthy: Twelve and a half cents.

Judge Sanders: Per thousand gallons?

Mr. McCarthy: Yes, sir.

Judge Ritz: And what is your minimum on that?

Mr. McCarthy: $125 a month. They use more than the minmum. They go away beyond the minimum.

(Witness stands aside.)

200 WILLIAM MCCARTHY, a witness introduced on behalf of the applicant, having been first duly sworn, testified as follows:

Direct examination.

Judge Sanders:

Q. Mr. McCarthy, you live in Bluefield, I believe?

A. Yes, sir.

Q. How long have you been connected with the Bluefield Water Works and Improvement company, the applicant?

A. About thirteen years.

Q. What position have you held with this company during that time?

A. I have been superintendent.

Q. What are your duties as superintendent?

A. Well, it is a matter of supervising generally the property—works of the water company.

Q. A general supervision of the property and the operation of the company's plant?

A. Yes, sir.

Q. Mr. McCarthy, do you know Mr. Luce, who made the inventory of the properties of the Bluefield Water Works and Improvement company which has been introduced in evidence in this case?

A. Yes, sir.

Q. Have you seen his report?

A. Yes, sir.

Q. Have you examined it?

A. I have.

Q. I wish you would please state whether or not this report of Mr. Luce contains a correct inventory of the property of the Bluefield Water Works and Improvement company.

A. I believe that it does.

201 Q. You have made an examination of this report with the view of determining whether or not it correctly reported an-invoiced the company's property, have you?

A. I have.

Q. And you have found no errors in the report, have you?

A. No serious errors. I believe what few——

Q. I mean, no errors in the listing of the company's property?

A. No, sir.

Q. It has been agreed between the parties to this proceeding that this invoice made by Mr. Luce is a correct inventory of the property with certain exceptions. I believe you were present when that stipulation was entered into, and I will ask you to take up these exceptions which are contained in that agreement and state whether or not this property, as invoiced, and which was not agreed upon, but which was accepted by this stipulation, is correctly invoiced by Mr. Luce in his inventory (handing witness paper).

A. Well now, let's see. Page 49. I take it that must mean this 44½ yards of concrete, doesn't it?

Q. I suppose so. Let me see.

A. That is the only item of concrete which I see on page 49. Oh, yes. I see. In the spring-house. Well now, I don't know with regard to that particular item. I didn't calculate the cubical contents of that particular basin, but it is pretty good size. That basin must be 15 feet, I guess, in diameter, and I believe it is about 6 or
202 7 feet deep. The walls are pretty heavy, I believe 18 inches, perhaps, in the bottom; slightly less on the top, with heavy coping. Yes, that is it. What is the diameter? Does it show?

(Mr. Miller hands witness book.)

A. Yes, 18 feet in diameter; 7 feet deep. It doesn't show the thickness of the walls nor the thickness of the bottom, but it is well and substantially built, and I believe that the—I would believe at least that the contents are there unless—I would only convince myself that they are not there by actually going over it and checking up. You may have done that, Mr. Miller, and I have not. There is considerable concrete in this comb which we show here. There is also a concrete covering over this 18-inch vitrified tile pipe, which passes clear through, which is not really shown as a covering in this cut. There is also a concrete gutter, with a coping, entirely surrounding this basin, a concrete overflow outlet to this basin as well.

Q. Now you can take up the other items. Make such explanation as you can of all of them.

A. Page No. 50, square yards shingles on springhouse. That is the same springhouse, I imagine.

Judge Ritz: That mistake, Mr. Mack, Mr. Miller finds there were 307 square feet there; your report has only got 99 square feet.

203 The Witness: Which is that, now, the last item of shingles?

Judge Ritz: Yes. The last item. Mr. Miller thinks it ought to be thirty some square yards.

The Witness: Well, I was going to say, I seem to make it more than that, about 28 or 29, possibly.

Mr. Miller: Thirty-four. You might have made that mistake by dividing your square feet by 27 instead of by 9.

The Witness: That is about it, I guess.

Mr. Alvord: Probably a clerical error.

Judge Sanders:

Q. Then Mr. Miller's report in that respect is correct, is it?

A. Yes, sir, Mr. Miller is correct; it should stand 34 instead of 11. Now, on page 50, "length of 18-inch tile in springhouse." Well, that ought to be 27 additional to springhouse—21. Well, there may be a *l*sight difference there, and I presume there is possibly; but that is a very small item.

Judge Ritz: That is at page 127, that picture, Mr. Mack.

A. Yes, 127. Mr. Miller's correction there, I believe, was 21 feet. Well, I presume, if this had reference to the springhouse alone, I guess 21 feet might be nearly right. However, I presume that they may have added the two or three sections of pipe that lead from the overflow basin as well. I see that don't seem to be mentioned here, and they may have added that to it.

Mr. Miller: That is separately entered.

204 The Witness: Is it separately entered?

Mr. Miller: Basin to springhouse, 18 feet 16-inch pipe.

The Witness: Well, that would be from the basin or dam to springhouse. That would be about right. You see, there is a concrete dam on the upper side that holds the water back, and the water flows from the inside of the dam through this 18-inch terra cotta and comes up in the center in this cone opening. But I think that would be about right. I don't think it is necessary to note any correction there. I think that would check about right. If anything, I would say that there is even a little bit more than Mr. Alvord notes here, if there is any difference at all. Now, that was page 50.

Q. I note on page 61 Mr. Miller seems to have two corrections noted, one on the 264 cubic yards of concrete reported by Mr. Alvord, he finding the amount to be 192, and second, Mr. Alvord reports 76 cubic yards of concrete in the walls, 2 feet thick, while Mr. Miller, I suppose, reports 46.7. Now, I can only say in this connection that Mr. Luce is more thoroughly acquainted with the work done and the amounts of materials used and removed at this station, and unless I was to go over the matter carefully and check it I wouldn't be able to say but what his figures are correct.

On page 62, the item of 17,666 feet of poplar in joists, purlins, and framing was corrected after Mr. Miller had called their

205 attention to it, to 14,089 feet. That is simply an error, I think, in calculation.

Roofing lumber reported by Mr. Alvord under the same item, No. 11, is 14,700 feet board. That seems to have been found by Mr.

Miller to be 16,046 feet. I couldn't say which of the two would be right.

There is an item of 1,120 lineal feet of 2½ inch by 3 inch poplar moulding, reported by Mr. Miller, I believe, at 552 feet. I don't recall how much moulding we had. Unless I was to check it up, I wouldn't be able to say between the two which is correct.

On page 82, Mr. Alvord's report indicates, under item 22, 1,080 cubic yards of solid side hill rock excavation, while Mr. Miller reports finding 500. I will say in this connection that there is a great deal more rock removed at this point than the surface would now indicate. The rock at this point is inclined about 30 degrees with the vertical, or about 60 degrees with the horizontal. The pumping station itself is built parallel to and in line with the axis of this inclination. Now, in cutting out and excavating this quantity of rock, we found it necessary to take off much more rock than the actual requirements, you understand, to take care of the building; cutting off the toe of the slope left these ledges of rock piled up on each other without support, where the tendency was for them to slide down and perhaps cave in the side of our building. In
206 fact, several big chunks of this rock slid in while we were at work, and we took it all off. There is nothing there now in which any basis for an estimate of the original quantity of rock could be had—from which an estate might be made. We indicated to Mr. Luce very carefully the quantity of rock removed, with a description of its original shape and contour; and from this he calculated his quantities. In judging from the enormous amount of rock that we removed, I think that his figure is at least conservative, if not low.

Q. That is Mr. Luce's estimate?

A. Yes, sir, Mr. Luce's estimate.

Now, regarding the estimate of cast iron pipe made on page 92 of Mr. Alvord's inventory, I would say that last night I went over these figures and my figures checked very closely with Mr. Alvord's. I find that he was short about 40 tons, I believe, of pipe.

Q. Who was that that was short 40 tons?

A. Mr. Alvord. Mr. Alvord's report lacks about 40 tons of having as much as I figured that we have got. And as this represents about 1,200 feet of cast iron pipe, I take it perhaps that there are 1,200 feet of the Ada spring line between the Ada spring and the Ada pumping station that was perhaps left out of the account. The way the profile is drawn up this error could easily have crept in, and that is the only way I could account for it.

207 Q. Then, with the explanation that you have made, as I understand you to say, the report and inventory of the properties of the Bluefield Water Works and Improvement company, as made by Mr. Luce, and filed with the evidence of Mr. John W. Alvord, contains a correct inventory of the company's property?

A. Yes, sir.

Q. You are acquainted with these properties, I believe you say?

A. Yes, sir.

Q. And have acquired this knowledge of the property since you became its superintendent thirteen years ago?

A. Yes, sir.

Q. I believe you are also a civil engineer, aren't you, Mr. McCarthy?

A. Yes, sir.

Q. And have been such a civil engineer about how long?

A. About twenty years.

Q. Who assisted Mr. Luce in taking the inventory of the company's property?

A. Mr. Akers, the foreman, assisted him on the outside, and while that was going on I got such information as I could on the inside—that is, from the office.

Q. The information that you gave him from the office, and which he used, as far as was necessary, in making his report, was furnished him correctly, was it?

A. As far as I know and believe, it was.

Q. This invoice of the company's property appears to have been made as of the first day of January, 1915. I will ask you
208 to state whether or not that inventory made as of that date truly represents the properties of the water company at this time.

A. No, it does not.

Q. Has there been an increase or a decrease in the property?

A. There has been a very material increase.

Q. I wish you would please state the increase. I mean by that, what property has been acquired since the making of this invoice.

A. It would be rather difficult for me to state that, because I haven't got any particular list. Most of the additions have been made in the way of new mains, new water mains, and services. We have also acquired a small additional strip of land near the Ada spring for the protection of the Ada spring and for the protection of the reservoir below the spring—for the protection and maintenance of a reservoir below the spring.

Q. These acquisitions of property by the Bluefield Water Works and Improvement company since 1915, will you file with your evidence a list of, together with the valuations thereof?

A. Yes, I can do so.

Q. Then, excluding from consideration the costs of the property since the first of January, 1915, I will ask you to state if the company now owns all of the properties mentioned and invoiced by Mr. Luce as shown by his report filed with the evidence of John W.
209 Alvord.

A. Yes, sir, they own them.

Q. Is all this property referred to necessary for the operation of the company's plant and for use in connection with the furnishing of water to the city?

A. Yes, sir, I would say that it was.

Q. And was acquired for that purpose?

A. Yes, sir.

Q. What other business is the Bluefield Water Works and Im-

provement company engaged in now except the business of furnishing to the city of Bluefield water?

A. No other business.

Q. Was it ever engaged in any other business?

A. Yes, it was.

Q. When?

A. Well, in years past up to perhaps twelve years ago.

Q. Then since that time, say twelve years ago, it has only been engaged in the business of furnishing to the city water?

A. Water, that is true.

Q. What other business was it engaged in prior to that time?

A. It was engaged in the real estate business.

Q. Was the business of furnishing water to the city of Bluefield and the real estate business a combined business, together, or was it kept separate?

A. Well, I rather believe—I am not acquainted with the exact inner workings of that part of it, but I rather believe, from what I learn, that the two businesses were combined.

210 Q. However, they only continued the business of real estate for about one year after you came with the company?

A. Well, say two years.

Q. Well, two years after you came with the company?

A. Yes.

Q. And from that time on you have been engaged in the business of furnishing water to the city?

A. Yes, for about ten or twelve years—it may not be twelve years.

Q. Well, I don't care for it accurately from you. Where does the company get its supply of water that it furnishes to the city of Bluefield?

A. It get it from springs along the base of East River mountain.

Q. How many springs, Mr. McCarthy, has the company from which it furnishes the water supply to the city?

A. I believe about 22.

Q. Are they all in use.

A. No, they are not all in use.

Q. How many of these springs are in use?

A. I think perhaps 18.

Q. Why, then, the purchase of the ones not in use?

A. Well, we have the Jarrell spring, which is not in use. It was purchased some six or eight years ago, with the belief that it would be necessary in a short time, to develop—to add to our present water supply. We purchased a similar spring, a little spring close to the Ada spring, which was used for watering sod around the Ada spring in order to keep it green. There was some question raised by

211 the city several years ago about whether the water from that spring was really good water or not, and whether or not it was contaminated, and we abandoned its use for that purpose.

Q. Now, in the purchase——

A. Pardon me just a minute.

Q. Yes.

A. We also bought an additional spring about the same time near

our Ada pumping station, which the city put out of commission by turning sewage into a sink here east of the city, a little more than a year and a quarter ago. That spring is not in commission at this time; its usefulness having been destroyed.

Q. How is that spring designated in the report? Do you remember?

A. I don't recall. I can get the number of it in a moment.

Q. That is the Wirt Bailey spring, isn't it?

A. We call it the Estill Bailey. No. 22 is the number of it.

Q. In acquiring these 22 springs that you have referred to, did the company acquire any real estate in connection with them?

A. Yes. They acquired real estate in connection with each and every one of them.

Q. Was the real estate so acquired by the company necessary in the operation of its water plant and in furnishing the supply of water to the city, and if so please explain why.

212 A. Yes, it was necessary to buy a section of real estate surrounding each spring in order to protect the spring itself from surface contamination. We have, in some instances, enough land around each spring that we own, but in the great majority of cases the amount of land that we own is far too small to fully take care of the waters of each spring.

Q. Judge Ritz, in his examination of Mr. Alvord, has referred to various tracts of real estate purchased. I wish you would please explain, Mr. McCarthy, in detail, why it was necessary in each one of these purchases to acquire this real estate. You say for the purposes of preventing the pollution of the water. Just explain how and why that became necessary and how it protected the water from pollution.

A. By owning a section of real estate around and above the spring we are enabled to fence it and keep stock, in the first place, away from the immediate vicinity of the spring. The more real estate we own around a spring the further we can keep stock from it. We own some springs here that the amount of land was—we owned with the springs made it rather difficult to even put the proper surface ditches around the spring and keep within the limits of our own tract to guard the water. I might mention here, in connection with spring No. 6, particularly—In the first place, the water company bought, when they bought spring No. 6, a half an acre of ground. A

213 number of years later they bought about two acres additional from a point above this spring adjacent to it and above—and a few years—only a few years later still, they bought another couple of acres still further up on the mountain above it in order to prevent stock from getting into the little seeps and water that ran out of the ground in times when water was plentiful, and to also keep stock from coming in contact with that water. Now, we bought, I might say, also in connection with this Ada spring supply, a tract of land of 236 acres, I believe, known to us as the Henry Bailey tract; spring No. 15 is located on it. Judge Ritz, I believe, has in mind why we bought that. He made a speech up here at the courthouse one night at an indignation meeting in which he stated, if my memory serves

me aright, and I believe it does, that this water company should be required to purchase enough land around those springs to protect the supply.

Judge Ritz:

Q. That is correct, isn't it, as a sanitary proposition?

A. I think so.

I can say we also bought 60 acres—80 acres—at spring No. 16, which tract has two springs on it, for the same purpose. We bought that because the water at times in the spring comes out of the ground away high on the side of the mountain; and we ran tile away up within a few hundred yards of the top of the mountain in
214 order to catch that water and take it under ground so that it didn't come in contact with the surface, to the spring proper, or to the intake of the pipe line. I believe that covers the situation.

Judge Sanders:

Q. Well, did you deem it, and do you now deem it necessary that this real estate be purchased in order to properly furnish this supply of water to the city, considering sanitary conditions?

A. I certainly do, and I really feel that one of the things that this company ought to do would be to purchase a very much larger tract at nearly all of these springs in order to keep vegetable matter from growing on them, you know, to keep from cutting off the timber, and in that way prolonging the life of these springs.

Q. Then your opinion is that you have not acquired enough real estate in connection with these springs?

A. Nothing like it; nothing like it.

Q. To give the city a pure supply of water?

A. No, sir, nothing like it.

Q. Is this land that you refer to around the springs used for any other purpose by the company?

A. No, sir, it it not. We have it fenced, in the main. I believe nearly all of our land is fenced.

Q. Was it acquired for any other purpose?

A. No, sir, it was not.

Q. And has it been uses for any other purpose?

A. No, sir, it has not.

215 Commissioner Northcott:

Q. You don't even farm the Bailey tract?

A. No, sir; we don't even allow stock on it. We keep a man living on it as a caretaker, but we don't farm it.

Judge Sanders:

Q. Then the object of the purchase of this real estate is to furnish a better supply of water to the city?

A. Yes, and for the purpose of protecting water against probable pollution.

NOTE.—At this point, it being 5:15 o'clock p. m., an adjournment was taken until the following day, Wednesday, July 26, 1916, at 9.30 o'clock a. m., at which time this hearing was resumed as follows:

(Last question and answer read.)

A. In buying these tracts of land, as a rule, we followed the practice of only taking what was actually necessary to properly surround the spring in order to put in surface ditches. In two instances, however, we have got a rather larger tract, one of them a tract of 236 acres, another, I believe, of 41 acres. In each of these instances the tracts are somewhat larger than is necessary to actually protect the water supply, but we were not able to secure a smaller portion, as the owner of the property wanted to dispose of all or none of it.

Judge Sanders:

216 Q. Well, is it proper or practicable to dispose of any of this real estate which you necessarily had to acquire in purchasing the springs, or is it necessary that it be retained in order to prevent the water from being polluted, as you stated?

A. I believe it would be well to retain it, in both instances.

Q. Has that been the view of the company, and is that the reason why it has been retained?

A. That is the reason why it has been retained. We have had an opportunity—at least, inquiries with reference to a portion of one of these tracts, but we decided, owing to the difficulties that we had in securing this tract, to protect the purity of this water—we decided not to entertain them.

Q. What demands have been made on you by the city or citizens of the city to acquire land surrounding your springs to enable you to prevent the pollution of the springs from surface water and otherwise?

A. Well, there has been agitation here for years. A great deal of it, I think, was improper, by reason of the fact that the people generally didn't understand what they were complaining about. However, the complaints were vigorous; caused us a great deal of trouble. We have spent a great deal of money here in taking care of the watershed, particularly in the vicinity of these springs, and how much of that amount of money that we have spent has

217 gone toward securing a better water I am not fully posted on; I couldn't say; but I think it has all tended to make a better supply, but it is not along the lines as the people supposed. In other words, the people believed here at one time that this Ada supply of ours was a terribly contaminated water supply. I believe a great many of the people of Bluefield here really thought we were pumping water out of East River. I have been asked that question many hundreds of times, I believe. In fact, I have been told right to my face, and my statement to the contrary has been contradicted right to my face, that I knew we were pumping out of East River,

and I think very much of this understanding has grown up among people who didn't take the pains to investigate.

Q. Mr. McCarthy, you have read through the report upon the value of the waterworks properties of the Bluefield Water Works and Improvement company, dated Bluefield, West Virginia, January 15, 1915, which was filed with the evidence of Mr. John W. Alvord, have you?

A. I have.

Q. Are you familiar with the prices that he has put upon the properties of the water company, as invoiced by Mr. Luce, which inventory is filed?

A. I am.

Q. I will ask you to state if these values, in your opinion, are correct values, and if he has properly and correctly valued the property of the company.

A. They are correct values, in my opinion.

218 Q. Please state whether or not you are familiar with the values of real estate in the vicinity of and in the sections of the county and location of the springs owned by the water company and referred to by you, and of the lands owned by the water company purchased in connection with the springs, and the houses thereon?

A. I am familiar with the values of such lands.

Q. Please state whether or not these values placed upon this real estate by Mr. Alvord in his report of valuation is a reasonably fair value of this property.

A. I consider them a reasonable and fair valuation.

Q. Are you familiar with the prices that are paid for construction work, such work as the water company has constructed for the use and equipment of its water plant, furnishing a supply of water to the city?

A. I am.

Q. I will ask you to state if the valuation that Mr. Alvord has placed upon the company's property—that is, the pipe lines and buildings and concrete work and all other construction work mentioned by him in his report, are fair prices for this work and a fair valuation of the property and material that was used in this work.

A. I consider them very fair prices. It is true that to look at a small item of concrete work containing a few yards, listed at $24 or $25 a cubic yard, would look rather high in comparison with other heavy work, such as railroad abutments, tunnel linings,

219 and things of that kind, where work is done for eight—seven and eight dollars per cubic yard, material delivered by the car right on the ground; but in these cases of ours the materials for concrete of that nature has been carried to the ground; even the crushed stone is carried to the ground. We used limestone for concrete. That limestone is carried to the ground and hand-knapped—hand broken. It cost $2.25 a yard to knap stone by hand. The sand for this concrete was carried on the backs of men in most places, mixing boards were carried, lumber for forms were carried. In fact, every single item that goes into the construction

was carried, I think, on the backs of man, rather than in a wagon. This can be said of the tile pipe used in infiltration plants, was carried; the pipe for the trunk lines of these springs, or part of the way, was carried by men and delivered at the place of use.

Q. Why was it that this material for construction work was carried instead of hauled?

A. Why, on account of the rough character of the ground. It wasn't possible without a great deal of work in the way of clearing up and getting a place to drive a team to many of these springs.

Q. Well, preparing a place of that kind would have been, or would it not have been, more expensive than to have paid for the carrying of the material?

A. Well, it would have been too expensive. The amounts
220 were too small to go to the expense of clearing it and making a roadway. The amounts of these items are very small; the items themselves are small. The price per unit seems large, but the amount of material used was small, and it is only the unit cost that appears large. I would say, too, in reference to clearing the ground on which these springs are located—It will be understood to begin with, that these springs issue from the ground in the hollows—in the ravines—in other words, on the slope of East River Mountain. That is true in every instance. Now, in a few of those instances—many of the instances, in fact, I believe, of this first series particularly, there is a pasture field either on one side or both sides of these spring tracts; and in clearing off this land, the farmers, instead of burning the logs and chunks, they simply rolled them down the mountain into these ravines, and we found, in a number of instances, I believe I wouldn't exaggerate if I would say we found logs ten feet high. When we come to clear it up our method was to split them up and stack them end wise for a month or so until they dried, and then in order to protect the trees growing on these tracts we burned them in small consignments; we didn't burn the whole pile at one time; just simply kept feeding them on a pile, and as they burned down added more until we got rid of them.

I think maybe that would apply to all of the spring tracts
221 except one or two, maybe one tract that we didn't have any particularly large item of expense; but it is generally true of all of these springs in the gravity series.

Q. What can you say about the cost of these clearings in the gravity springs being a reasonable or unreasonable cost?

A. Well, it is placed at about $100 per acre. I remember when I was a boy we used to clear land in our part of the country for $20 an acre, when labor was 75 and 90 cents a day, and the men that did the work didn't make very much money; they made a living at it, I believe; but comparing that class of cleaning up land and this class, I would say they were entirely two different classes of conditions, not at all similar.

Q. Well, what was the difference?

A. Well, in one instance, where land is usually cleared up, they would use oxen or mules to pull these logs together; they had

plenty of hardwood to mix with these logs to burn up. In our case we didn't have that; we didn't have any hardwood to mix with these rotten logs or sogs. We simply had to split them up in order to dry them out to burn them. That was one reason. Another reason is that, particularly on the east side of these gravity springs, the conditions under which men work are not good; a long ways for men to go to work in the morning, perhaps, a long way for them to return at night. It is rather difficult to get good men at
222 the ordinary day wage to work at that sort of work. The same may be said in regard to the digging of infiltration lines. Those lines were dug through tough clay and rock, large boulders of rock were generally found in most of them, and in getting out those boulders, shooting them up to get rid of them, the sides of the ditches were knocked in and very much more amount of material was handled than there would be if the lines were dug through nothing but clay, or if they were dug through solid rock. We encountered, it is true, in a few instances—in fact, many instances, we encountered solid rock in places, but, as a general proposition, the ditches were dug through heavy red clay through water all the way. If there was no water there it wouldn't be necessary to dig these ditches; but we dug the ditches in order to take the water that came to the surface in many places in little springs. That water we led through infiltration lines so as not to allow it to come to the surface and avoid the contamination that might follow if it was allowed to come to the surface.

Q. Was it necessary for the development of these springs to do the clearing referred to?

A. Oh, yes, to relieve these logs and old trees that had fallen there years and years before, lying around; it wouldn't help the appearance of things, neither would it help the condition of the water. We cleared off everything, even small brush, at the time, and burned it up, leaving all of the trees, no matter how
223 small. We dressed them up and trimmed them out and allowed them to stand. They are still standing, of course.

Now, I might say, too, in addition to all of these prices and expenses shown by Mr. Alvord on this inventory, that the cost of doing this work was summed up and given to Mr. Luce. He had a record of the exact amount of dollars and cents spent in both materials and supplies used separately to check against his valuation, which would aid him very materially in ascertaining the values shown.

Q. The cost of what work do you mean, Mr. McCarthy?

A. I mean now the cost of all of these improvements made on both series of gravity springs, the Ada spring, the Ada dam, and the Ada pumping station—in fact, all of the improvements that has been made to the plant here in the last twelve or thirteen years.

Q. And such as are referred to in his inventory of the company's property?

A. And such as has been referred to in the inventory made by him of the company's property.

Q. Who furnished him this information?

A. Well, I furnished him a portion of it. It was furnished principally and as a whole by our bookkeeper in Philadelphia.

224 Q. What have you to say, Mr. McCarthy, as to the value of the springs as water rights that the company owns referred to in the inventory and in the report of values made by Mr. Alvord?

A. Well, taking Mr. Alvord's explanation of the values, I think and believe they are all right. Of course, that opens up a new thing to me. I wouldn't have known myself how to go about ascertaining the value of springs. I knew they had a value. The amount placed on them by him, however, was a little smaller than I really believed they were worth. I had in mind that perhaps they were worth a little more.

Q. Than the value placed on them by Mr. Alvord?

A. By Mr. Alvord. Mr. Alvord's reasoning is very clear, and I will accept it as a fair valuation.

Q. Is that your opinion, that these springs are of the value placed on them by Mr. Alvord?

A. I consider them so.

Q. In this connection, I wish you would please explain the location of the springs owned by the company and whether or not the flow from these springs is adequate for water supply for the city, and what difficulties the company now labors under, and has labored under for years past, in furnishing to the city an adequate water supply.

A. The springs of the Bluefield Water Works and Improvement company are very nicely set out and located in a map that accompanies Mr. Alvord's inventory, attached to and made a part of it.

225 Q. Mr. Luce's inventory, you mean?

A. Mr. Luce's inventory, attached and made a part of it. The No. 1 spring of the gravity series, as well as the Beaver Pond spring, lays and is located and situated about two miles from the city hall in the city of Bluefield, in a southerly direction from the city hall. Now, the gravity springs continue at intervals along the side of East River Mountain for several miles east—three or four miles, perhaps. Than we have another series of springs in the vicinity of the Ada spring, still along the base of East River Mountain, extending eastwardly about nine miles, perhaps, from the city hall. These springs afford considerable water at certain seasons of the year. It would be rather hard and rather difficult to estimate the maximum flow. In fact, we never considered the maximum flow to amount to anything. The maximum flow would mean the amount delivered by them in very wet weather, or immediately after heavy rains. This flow does not keep up but a very short time after these rains, and in a week or such a matter after the rain the water is usually down to normal again; usually in two or three days after a heavy rain the water is down to normal; so that the maximum flow of the springs has never been counted on by us. The minimum flow, ho-ever, we have approximated and estimated several times—a number of times—and we are better acquainted with that flow, as

that is the flow that materially affects us. The minimum
226 flow from the western series—the first series of gravity springs—is found by us somewhere in the neighborhood of 150,000 gallons a day. We measured them one year—I don't recall what year——

Q. Now, what spring is that?

A. We are speaking now of the gravity springs, the first series.

Q. All of the gravity springs furnish you, at the minimum rate, 150,000 gallons a day?

A. Well, 150 and above. I was going to say that on October 7, 1908, during a very dry period, we measured the flow of those springs and found them to equal 177,627 gallons; the flow from the Ada spring on the same date was 636,987 gallons, measured by the engine counter on the Ada pump, which was pumping all of the water that issued from the Ada spring on that day. The flow from Beaver Pond spring I haven't got at the same time, for the reason that the pump wasn't running, but I would say that its flow would be somewhere in the neighborhood of 250,000, perhaps, or 300,000 on the same day. That constitutes and makes up the flow from our springs. Since that time, however, we put into commission a spring known to us as the Estill Bailey spring, near the Ada pumping station, the normal flow of which was about 240,000 gallons daily. That spring didn't vary much with the season. It was about the same winter
and summer. That was the spring that I referred to yester-
227 day as being put out of commission by sewage emptied into a sink hold by the city; and since April 1st of last year, or about April 1st of last year, it has not been used by us; the water hasn't been fit to use since that time.

Now, I might say in this connection that during the dry weather periods of the past two years we have been considerably embarrassed by the failure of our water supply on account of dry weather. A number of times last year between July and December, and over the corresponding period of the year before, we were pumping into this city—that is, pumping and furnishing every available drop of water that we had; and a number of times during that particular period the amount of water furnished was not equal to the consumption; that is, it wasn't uniformly equal to the consumption. The water impounded in our storage tank here would drop from day to day, you understand, until a thunder storm or rain storm would set in and raise the waters momentarily and allow us to refill—get our supply back again; and in a few days we would notice the quantity sinking again. That would continue for some time during the dry weather. So far this year we have noticed no shortage of water, and I don't presume we will have any for at least a month yet, on account of the very heavy and severe rains that we have had in the last month.

228 Judge Sanders: Just read the question, Mr. Price.

(The following question was read:

"In this connection, I wish you would please explain the location of the springs owned by the company and whether or not the flow

from these springs is adequate for water supply for the city, and what difficulties the company now labors under and has labored under for years past in furnishing to the city an adequate water supply.")

A. To answer that question fully, and to go into the troubles that this company has labored under, would take me back before my connection as superintendent with the company. I know, however, that prior to my connection with the company that very serious shortages in water has occurred here. Since my connection with the company we have materially increased the amount of water. We have bought additional springs and greatly improved the springs that were formerly owned by the company, at a very great expense. This has carried us, as I have stated in this question, down to two years ago, with an apparently adequate supply of water for the actual needs of the city; but as I have just stated, for the past two years we have been right up against the limit.

Q. When the flow of the water is great the needs of the supply of water is lessened. Isn't that true?

A. It is a fact that during the wet seasons our supply of
229 water is the greatest and the demands made on us for water are the least.

Q. Then when the supply is small, or when it is the smallest, the demands are the greatest?

A. When the supply is small the demands on us for water are the greatest.

Q. And as the supply is reduced the demands are increased?

A. And as the supply is reduced the demands are increased; that is correct.

Q. Because as a fact your supply depends very largely upon weather conditions, whether the season is a dry or wet season?

A. Very much so.

Q. Something has been said in the course of the examination of the witnesses in regard to the impounding of the water from the Ada spring. I will ask you to speak on that subject, as to whether it is practicable or not, and state what you have to say in regard to the regularity of the flow from the Ada spring.

A. It is practicable to impound a small quantity of water from the Ada spring. In fact, the company a number of years ago, built an impounding reservoir holding approximately 20,000,000 gallons immediately below the Ada spring. Water in this reservoir had been impounded for several years following the building of it, and continued so until about 1908, when, at the direction of the city officials,
the water in that impounding reservoir was allowed to run
230 out—we opened the sluice valves and allowed it to run out.

The supposition was on the part of the officials—and I will say "supposition" because I am satisfied that there was no good reason why that action should have been taken by them—the water was claimed to have been had. No investigation, to my knowledge, was made by them to ascertain the quality of the water, or the quality of the water that might be impounded in this reservoir. Of course, it is true the amount was small, only 20,000,000 gallons, but at the

same time I think that it is very important, and I think even today that that water should be kept impounded in that reservoir. However, the order has never been lifted, and no change has ever been made in the conditions there. We are in the position to, with very little work—to maintain at that point—at least to impound during the flood seasons of high water at Ada spring, when we are not pumping the water from Ada spring or only a small portion of it, the full quantity of 20,000,000 that might be held there until the dry weather season, you understand, and assist very materially in the handling of a serious fire here in town, more particularly for fire purposes than for domestic purposes, as the quantity impounded wouldn't be large enough to seriously affect the amount of water that we might pump in here daily on account of a water shortage otherwise. I might add to that that my understanding is that that storage dam or
231 reservoir was built for the purpose of maintaining water there to be used in the case of a serious conflagration here when the Ada spring would not be supplying more than the amount of water ordinarily used in domestic consumption.

Q. Did you speak as to the regularity of the flow from the Ada spring?

A. I don't believe I made reference to that. The flow from the Ada spring is very regular. During very wet weather I have seen the waters pour out of Ada spring when I believe they exceeded perhaps five or six million gallons a day, for perhaps a day or two, when they would drop down to maybe a million to two million gallons, and during the summer months the supply is fairly regular, about in the neighborhood of half a million gallons.

Q. How does the regularity of the flow from the Ada spring compare with the regularity of the flow from the other springs that you have referred to?

A. Well, I don't know that I ever made a comparison exactly; but I would imagine that there is a similar ratio between them all. That takes into account even the gravity springs, excepting, you understand, the Estill Bailey spring that was damaged by sewage. That spring I have never been able to ascertain was materially influenced by either wet or dry weather, having the same flow ordinarily the year around; but all of the other springs, I think, are seri-
232 ously affected by dry weather, and I believe the ratio between them is very similar.

Q. As I understand you, shortly after acquiring the Ada spring you put in an impounding plant, and you began to impound water there until the city of Bluefield protested against the use of it, or protested against this water being impounded. Is that correct?

A. That is correct.

Q. And since that time, have you abandoned this impounding plant?

A. No, sir; the reservoir is still intact, and with slight repairs, and with the use of a team or teams to rescrape the interior—the bottom, in other words—of the reservoir, to get rid of the vegetable growth that has since grew up in it, this reservoir is in good shape to take care of water today. The spillway, perhaps, would have to be re-

lined. The dam was built originally of logs and boards, sheet piling; but since the building of the dam the cribbing has been filled with rock and dirt—earth—as well as the inner face has been added to with dirt, and puddled, so that that part of the dam is still intact. The logs now don't materially affect the dams one way or the other. It is not necessary to rely on the support the logs originally gave the dam to impound water. There is rock and dirt enough in the dam to maintain this supply without the logs, so that as a utility
233 the dam is an everlasting one.

Q. You are not, however, furnishing any water to the city from this impound?

A. No, we are not impounding any.

Q. And have not been since the city protested against it?

A. Yes, that is true.

Q. Would it materially aid you in furnishing the water supply to the city to use this impound?

A. It would materially aid us in supply- the city in the event of fire. Of course, it would add some to our supply in the event we ran short in dry weather. Twenty million gallons distributed throughout the course of two months in very dry weather might very materially add to our supply of water; but particularly during a big fire here, that dam, as I stated before, should be kept full of water.

Q. Then if permission be given you by the commission to impound water there and use the water from the impound it would greatly aid you in your water supply to the city?

A. It would.

Q. You have spoken of your water supply, and that that supply is inadequate. I will ask you to please state how or in what way you can add to that supply, if you know.

A. Well, the most feasible route, I believe, if the supply could be obtained legally, would be from the Bluestone river. I am inclined to that opinion. We have several sources from which water
234 might be obtained. It could perhaps be obtained from Wolf Creek, in Bland county, Virginia, across East river mountain, but the putting in of a plant would cost much more than it would in this instance. We might also get water from New River, twenty miles away; but in both of these cases I believe it would be necessary to install double pumping stations—that is, relay pumping stations—or, in the first instance, to tunnel East River Mountain. The cost in both instances would be about the same. The Bluestone supply, if an impounding space large enough to hold back the amount of water that we needed might be found, would be the most feasible, in my opinion, and practicable.

Q. Well, where would you have to go on Bluestone to do this impounding, Mr. McCarthy?

A. My opinion is that we would have to go to a point about six miles above Graham. At a point about four miles—three miles, perhaps, above Graham, the best location could be found; the valley is wider, and a place perhaps large enough to impound could be found so as to get the required amount of water we want dammed; but it is in limestone formation, and the limestone in this section is

cavernous; the courses are vertical, or nearly vertical, and are broken up, so that the matter of impounding a large amount of water in a section of that kind would be a serious one on account of the water finding its way into the caverns, you know, and losing it. Now, to go to a point two miles, or three, further up, the valley nar-
235 rows up considerably; and the finding of a space large enough for the impounding of 100,000,000 gallons would be rather difficult. In my opinion perhaps two or three dams might be necessary instead of one. I might say, too, that the grade of the valley upward toward the head of Bluestone increases naturally as you go towards the head, consequently the water impounded would be small in proportion to the area of the dam itself.

Q. Do you know what difficulties you would meet with in acquiring water from Bluestone or Wolf creek?

A. Well, I am not thoroughly acquainted with just what difficulties might be encountered. We would perhaps encounter legal propositions that would make it difficult. We are not permitted to do business in Virginia. We would have to get a Virginia charter; and what right we would have to condemn in Virginia to furnish a city outside of the state I am not advised, but I imagine that all of our negotiations would have to be carried on in a manner thoroughly agreeable to the people.

Q. By voluntary contract?

A. By voluntary contract.

Q. What have you to say about the water right of the Bluestone river already having been acquired by someone else?

A. The water rights of Bluestone river, as I am, I believe, reliably informed, belong to the Norfolk and Western Railway company.

236 Q. From what points?

A. Well, from a point up on Bluestone, I don't know how far, but that is not material, as there is no large streams enter Bluestone on the Bluestone river until you get to Graham, and then it is only a small stream found to enter into it, to a point considerably down on Bluestone river, down towards Bramwell, or perhaps below Bramwell.

Q. Are there any other sources that you can look to except the ones named by you?

A. Well, we have Brush Fork, a sluggish, muddy stream in this county, perhaps four or five miles away. We have another known as the Mud Fork, I believe, at Bluestone— —

Q. Where is that?

A. That is between here and Pocahontas along the Norfolk and Western Railroad.

Q. About how far away?

A. I presume it is eight miles. And the waters of that stream are entirely taken care of by the Norfolk and Western at its mouth.

Q. That is mud fork?

A. Yes, by a large storage dam.

Q. You say that the Norfolk and Western has acquired the water rights on that stream?

A. They have.

Q. Entirely?

A. Yes, sir. I might say, too, that I was employed by the Norfolk and Western as roadmaster on this division for several years, and that during my service with that company it was my duty to look after, locally, the water used by the railway company
237 for their engines on this division; and at least two seasons that I was with the railroad company they had a very serious shortage of water on Bluestone; there was not enough water at Graham nor at Falls Mills—Not at Falls Mills, but at Flat Top Yard, where the railroad company have water tanks, to supply the railroad company with water at those two points. They pump the water from Bluestone for those two tanks; and I recall distinctly at one of these seasons at least there wasn't any perceptible amount of water going over the dam at Falls Mills; a little trickle that could be carried away easily in a bucket if it was caught by one person. I remember, too, that in order to get water for the Flat Top Yard tank, that we dug a pit down in the sand and gravel in the bed of Bluestone river, right near the bridge and close to the pumping station, and put the suction end of the pump down in this pit; and by pumping that pit we got considerable water; not enough, however, to supply the tank; and water for the railroad company was hauled in tanks from a supply the railway company had down here near Ingleside—I don't recall the name of the tank they have there—but nearly all of the engines used here on the Norfolk and Western on the Pocahontas division at that time were supplied with three tanks, that is, one tank connected with the engine in the usual way, with two additional tanks put into a gondola car immediately behind this
238 tank; and these engines were run with these tanks east of here to Ingleside and filled with water and used to operate this Elkhorn coal field.

Q. What can you say about whether or not it would be practicable to use the water from Brush Fork?

A. I would say that it would not be practicable. In the first place, it would require large storage dams there, and the water, to begin with, is very poor looking water. Of course, it is true it might be filtered. At the same time, judging from my knowledge of Brush Fork and its appearance it is entirely too small to go to the expense of installing a plant of the size necessary to take care of the needs or possible needs of Bluefield for the next fifteen or twenty years.

Q. I believe you say that your water supply is inadequate to meet the existing demands of the city. In what way and to what extent is it inadequate?

A. It is inadequate to meet the demands of the city of Bluefield, in dry weather, particularly; it is inadequate to meet the demands of the city of Bluefield in cases of fire. We have here, as far as our distribution mains are concerned, a very good distribution system, as far as it goes, but at this particular time, if the city continues its demands on us, and we have reason to believe they will, about 35,000 feet of additional six-inch pipe will have to be laid, and

about 3,700 feet of 10-inch pipe, to give the city a good, reasonable fire service.

239 Q. What will be the cost of the equipment necessary to give to the city a proper supply of water to meet existing conditions and demands?

A. To put in these mains I estimate will cost about $40,000; and to get an additional supply of water adequate for the present needs and to take care of the reasonable requirements in the future, from the information at hand, I take it that about $240,000 would be necessary—$240,000 additional would be necessary.

Q. Then, as I understand you, it would cost forty thousand, did you say, or fifty?

A. Forty thousand.

Q. Forty thousand dollars to furnish to the city water to meet existing demands and conditions?

A. Yes, sir.

Q. And to provide for the near future that it would cost something like $240,000?

A. Yes, sir, in addition.

Q. In addition to the $40,000 necessary to be spent now?

A. That is very true.

Q. And in addition to the outlay that has already been made by the company?

A. In addition to the outlay already made by the company.

Q. And now in operation?

A. And now in operation; yes, sir.

Q. I see filed with the record in the case of the City of Bluefield against the Bluefield Water Works and Improvement company, which case is consolidated with this case, a copy of the

240 printed rules of the company. I will ask you to state if those are the rules of the company, and if they are refer to them and make them a part of your evidence.

A. They are the rules of this company, and we operate under them. I refer to them and make them a part of my evidence.

NOTE.—At this point, it is agreed between the parties hereto that the evidence taken in this case and that the evidence taken in the case of the city of Bluefield against the Bluefield Water Works and Improvement company, consolidated and heard with this case, shall be taken, considered, and read in both cases.

Q. These printed rules of the company to which you refer, I believe were adopted in 1908. That is right, isn't it?

A. That is correct.

Q. Since that time, has the company operated under these printed rules?

A. They have, with the exception of a modification of a few of them, made necessary by the adoption of rules by the Public Service Commission which we are required to operate under.

Q. And with that exception the printed rules are the rules of the company?

A. Yes.

Q. And since the modification was made as you have stated, they have operated under the printed rules with the modifications so made?

A. Yes. And with the exception that in addition we are now rendering bills for service quarterly instead of monthly as
241 required by those rules. This modification was permitted by an order of the Public Service Commission at our request for such an order.

Q. Please state if you now recall what changes have been made in the printed rules.

A. Well, there is no material changes actually made in the rules. We simply modify our operation, you understand, to agree with the rules of the Public Service Commission.

Q. Then, as I understand it, you operate under the printed rules of the company except wherein they are in conflict with some order or requirement of the Public Service Commission?

A. That is correct.

Q. Do you know exactly wherein the printed rules do conflict with the rules or requirements of the Public Service Commission?

A. I only recall one, and that is with reference to the installation and maintenance of service pipes. Of course, that means a number of rules in that book, as there are a number of individual rules bearing on that subject.

Q. Are the water rates charged by the applicant water company fixed by the printed rules introduced in evidence?

A. They are, and they are found on pages 47 to 51, inclusive.

Q. Of the printed rules?

A. Of the printed rules.

Q. And how long have these rates been in force, and have they been conformed to in the conducting of the company's busi-
242 ness?

A. These rates have been in force, I believe, ever since the company began business, so far as I know.

Q. Well, have these rates been adhered to, conformed to, in the conducting of the company's business?

A. They have, strictly.

Q. I mean to say, in any instance do they charge a greater or less rate than those fixed by the rules of the company?

A. They do not.

Q. There has been something said in regard to this concrete work that was done around the springs on East River Mountain in regard to whether or not the stone would have to be carried to these places, or whether it could be acquired on the ground. I will ask you what you have to say about that.

A. The stone was carried to the place where the concrete was mixed and used.

Q. There is no limestone there, is there?

A. No limestone; no.

Q. Only sandstone?

A. Only sandstone.

Q. You can't use that in concrete work?

A. Not very well.

Q. Up till 1908, I believe the water company installed and maintained what is known as the service pipe, the pipe leading from the main to the property line of the consumer. Is that right?

A. That is true.

Q. Since that time who has installed and maintained the
243 service pipe?

A. Since the first day of April, 1908, and up to the first day of August, 1915, the property owners furnished the service pipe, the water company furnishing the corporation stop——

Q. Now, what is that? Explain it, please.

A. The corporation stop is the valve connection that is introduced into the main in which the service pipe is attached and leads the water into the curb. This corporation stop was furnished by the water company always; and the drilling and the placing of it was done by the water company, without charge to the consumer or property owner.

Q. Did you say since the first of April, 1908?

A. The first of April, 1908, the date on which our rules became effective.

Q. The consumer, then, as I understand you to say, since the first of April, 1908, has been installing and maintaining the service pipe with the exception of the corporation cock, you call it?

A. Corporation cock; yes.

Q. Well, how long did that continue to be done by the consumer?

A. It was continued from April 1st, 1908, to August 1st, 1915. That would be seven years and four months, I believe.

Q. How many services were put in during that seven years and a few months?

A. I don't recall. Mr. Alvord's inventory I guess I could get it off of.

244 Q. Do you want the report of valuation, or the invoice?

A. Yes, sir. About 1,600—What is the question again, please, sir.

(Second preceding question read.)

A. I haven't got the information exactly, but as I remember it, about 1,600 ordinary services were in use at the time that these rules were put into effect, and on June 30, 1915, we had 2,455. Of course, you will understand that that don't take into account the month of July. There might be a few put in during the month of July, but that would mean roughly about 1,500 services placed by the consumers or property owner.

Q. Well now, how many services have y now?

A. June 20, 1916, we had 2,600.

Q. June 30, 1915, you say?

A. 1616. At the present time, we will say.

Q. What is your understanding of who is the owner of the services that were installed by the property owner or by the consumer?

A. My understanding is that the services installed by the consumer is the property of the water company.

Q. How do you explain that?

A. Well, I understand that that has been the decisions of the several courts, beginning, I believe, in the Knoxville case. I don't recall now just how many decisions I have seen on that point; I believe several, however. I might say, too, that it has been
245 the practice and custom to consider, by the railway companies, sidings that have been put in by various parties and paid for, each individual piece going into the construction of that siding paid for by the party wanting the siding to the railroad company, and the railroad company claim the siding as their own property. That has been true of railroad companies, to my own knowledge, for fifteen or sixteen or seventeen years at least; and I would consider that a service pipe is very much the same class of property, as far as that point is concerned, as a siding is for a railroad company used by an individual in loading lumber or other materials.

Q. Reference has been made to the flow of water from Beaver Pond spring. Does your company use that entire flow? If not, why not?

A. We do during dry weather.

Q. Use the entire flow?

A. Well, we don't use the entire flow, of course; we are not permitted to use the entire flow.

Q. That is what I am asking you about.

A. Yes. We have to allow some of it to go to the farms below.

Q. You are only permitted to use the surplus? Is that it?

A. Yes, use the surplus.

Q. Mr. McCarthy, what have you to say about the rate charged for fire protection as compared to the rate charged to the individual consumers, or, in other words, the public service rate as com-
246 pared to the private consumers' rate?

A. Well, the public service rate here paid us is very small.

Q. Well, what is it? Please state that?

A. The amount paid by the city of Bluefield to us in the way of fire hydrant rentals amounts to about thirty—between thirty-one and thirty-two hundred dollars, I believe; I can't say just what it is; I am not posted just to the minute, but it is somewhere in that neighborhood.

Commissioner Northcott:

Q. How much per hydrant?

A. It is at the rate of $30 per year for each hydrant installed, with the exception of 15 hydrants that were installed as a franchise requirement, the services of 15 hydrants being furnished free to the city.

Judge Sanders:

Q. And how many hydrants?

A. About 124, I believe, now—126.

Q. What are the losses, Mr. McCarthy, in the collection of your water rents, if any?

A. Our losses are very small. I can't state just what they are. We have in the way of adjustments perhaps anywhere from two to four hundred dollars a year. Most of that is on account of rendering bills to consumers in error; that is, properly on account of not being advised as to vacant property by the property owners. The bills are made up and sent out, and the vancancy not being known to us until it is made known by the property owner, or the party that usually pays the rent. In such cases we always adjust this,
247 and get a voucher entry, you understand, to straighten up our accounts with. Our actual losses in water rent collections will amount maybe to less than $10 per year.

Q. Under your system of collection of water rents, your actual losses only amount to about $10 a year?

A. About $10 a year, I believe. Less than ten—that is, less than ten. I remember one year several years ago Mr. Rhodes informed me, I believe, that losses was less than $3 for one year.

Q. Then the prosecution of your collections is pressed diligently?

A. It is pressed diligently.

Q. What is the population of the city of Bluefield?

A. I estimate the population of the city of Bluefield about 15,000—between fifteen and sixteen thousand.

Q. What is its age?

A. Oh, I suppose the city of Bluefield goes back to about 1888. That is really about five years before my time. That is rather an assumption by me.

Q. The growth, then, of the city since 1888 has been a gradual, steady growth, then, has it?

A. Well, I couldn't say that it has been exactly gradual. I know Bluefield rather more or less intimately since 1897; and I would say that from at least the beginning of the year 1897 to 1902 the growth of the city of Bluefield was very slow—was very slow; but since that time, since 1902, the growth has been very rapid.

248 Judge Sanders: Well, I believe that is all I want to ask you, unless you have something to state.

Judge Ritz:

Q. Up to 1913, it fell off again?

A. Well, I don't know.

Cross-examination.

Judge Ritz:

Q. Mr. McCarthy, what is the capital stock of the Bluefield Water Works and Improvement company?

A. Well, I am not very well informed about the stock part of the company, but I believe it is $312,000.

Q. The capital stock?

A. Yes.

Q. Has it any bonds outstanding?

A. I understand that it has not.
Q. All stock. Do you know what was paid for that capital stock?
A. No, sir, I do not.
Q. Who makes the returns of the company for the purposes of taxation to the Board of Public Works?
A. The returns are made in our Philadelphia office.
Q. You don't know who makes them?
A. By Mr. Kurtz, I believe.
Q. Do you know at what valuation the company's property was returned for taxation last year?
A. Yes, sir.
Q. What was it?
A. I am not positive about last year, but I believe they returned at $190,000.
Q. $190,000?
A. Yes.
Q. About one-third of their real value, as you——
249 A. About one-third of the invoice value.
Q. Well, about one-third of their actual value?
A. Yes.
Q. And you have been paying taxes on it at that valuation?
A. Yes.
Q. Mr. McCarthy, a great deal of the works that is included in this inventory has been done since you have been superintendent of the water company, hasn't it?
A. A large portion of it has, yes.
Q. And you have the record of the cost of doing that work, haven't you?
A. Yes, we have.
Q. The work of constructing the Ada pumping station was performed since you were connected with the company, wasn't it?
A. It was.
Q. And laying the main from Ada pumping station to Bluefield?
A. No.
Q. That was done before you——
A. That was done prior to my——
Q. Have you a record of the cost of construction of the Ada pumping station?
A. Yes, in a way.
Q. What did it cost to construct that station?
A. Well, I don't know. I will see. (Refers to book.) The cost of the construction of the Ada pumping station, as furnished by Mr. Triol, our bookkeeper, is shown to be $55,414.30.
Q. What is included in that $55,000?
250 A. Everything that entered into the construction of that station, from the foundations to the top of the roof.
Q. Do you mean to say that it cost $55,000 to build that house?
A. Yes, sir, according to our reports.

Judge Sanders:

Q. You don't mean to say just to build the house, do you?
A. No, I mean the station. His question was on the cost of the Ada pumping station.

Judge Ritz:

Q. I notice item No. 11, Mr. Alvord's report of valuation, Ada station, he puts it at $15,000. Does that correspond with the item that you say actually cost $55,000?
A. I presume that has reference to the pump alone. I presume that is the pump, possibly. It may be the building alone.
Q. I want to find out what that $55,000 includes.
A. Item what, Judge?
Q. Eleven.
A. Yes, I would say that was the building, item 11.
Q. Page 72, it begins.
A. Yes.
Q. Well, have you got any figures on the cost of the construction of the building?
A. No, I have not. I have got them, too, but I mean I haven't got them available at this moment.
Q. Have you those figures at your office?
A. Yes, sir, I presume we have.
Q. Well, I wish you would get those figures, Mr. McCarthy, of the construction of the building?
251 A. Well now, that would be a very big proposition. I don't know whether I could do that very readily or not.
Q. You didn't keep those separately?
A. Well, yes, every item was kept separately, but you are to understand that our reports are simply made up by months, you understand, and forwarded to our Philadelphia office, where our books are kept. We keep no books here, and our reports are complete in themselves only by each month, you understand. We can get that information for you, I believe, off of the books of the Philadelphia office, without going to any trouble compiling it.
Q. You have those all here?
A. I think so.
Q. Now, you say the total cost of this station was $55,000, and the first item in Mr. Alvord's inventory that enters into that is the building, at $15,000. I am only giving the round numbers.
A. Yes, $14,000—well, $15,000 without depreciation.
Q. Yes, first cost.
A. Yes, sir.
Q. Then the next item, No. 12, does that enter into it?
A. Yes, that enteres into it.
Q. That is $2,931?
A. Well, yes.
Q. No. 13, coal chute. Is that a part of it?
A. That is a part of it.

Q. $867. Oil house, No. 14, that is also a part of it, isn't it?
A. That is a part of it.
Q. $168. The Worthington pump, is that also a part
252 of it?
A. That is also a part of it, yes.
Q. That is, I believe, $1,438?
A. Yes.
Q. The Snow pump, that also belongs to it, does it?
A. Yes, sir.
Q. And that is $18,644?
A. It seems to be $16,644.
Q. Sixteen. That is a six instead of an eight. Is that 16,844 or 16,644?
A. 16,644.
Q. Auxiliaries. Is that also included in your $55,000?
A. Yes, sir, that is a part of it.
Q. $1,049. Boiler plant—is that included in your $55,000?
A. Yes, sir.
Q. That is $6,444.
A. Yes, sir.
Q. The piping in the station. Did you include that in your estimate too?
A. Yes, sir.
Q. And that, I believe, is $1,639. The next item, piping in station yard, is that included in your item of $55,000?
A. What item is that, Judge?
Q. It is No. 20.
A. No. 20.
Q. It is on page 95.
A. Yes, I would say that was included.
Q. That amounts to——
A. $210.13, and another item of pump discharges, $939.40.
Q. Makes a total of $1,447.95.
A. Yes.
Q. Now, the next item, No. 21, concrete retaining wall. Is that included in it?
253 A. Yes, that is also included. I suppose it is included; now, I don't know. It is a part of the plant, I mean; it is a part of the——
Q. What I am getting at, Mr. McCarthy, is, all the items make up this $55,000, this total cost that you gave.
A. Yes.
Q. Now, No. 22, station yard improvements—is that included in your item of $55,000?
A. Yes, sir.
Q. That is $3,915?
A. Yes.
Q. No. 23, how about that, station miscellaneous?
A. Yes, that is included as well.
Q. That is $1,400. Now, are there any other items in Mr.

Alvord's inventory that go to make up that $55,000, the cost of the Ada pumping station?

A. Well, yes, item 23 here—item 23——

Q. I think we included 23, station miscellaneous.

A. Well, that may be.

Q. Yes, we included that. That is the one we quit on.

A. Yes.

Q. Are there any others in this inventory that go into that $55,000?

A. Well, really, I couldn't tell you, I am sure, without going over the inventory; I don't know whether it is all right here in one row or not—I mean, in one regular order. I haven't gone through it to know whether that covers every item or not.

Q. You can't say with certainty whether or not that item
254 of $55,000, actual cost, covers any more than the items I have enumerated?

A. No, I can't.

Q. Well, taking up these items that go into that—or some of them—have you any information, Mr. McCarthy, from which you could tell me what the company actually paid for any of the items of machinery that is in this station?

A. Why, we have copies of the invoice, and those copies were at the disposal of Mr. Miller. He checked them over, I believe—many of them, at least—the same invoices, in other words, that Mr. Luce, and, in fact, the same source of information was open to Mr. Miller. We have copies of all of those invoices, and we have the originals, I presume, on file in Philadelphia.

Q. Well, have you any records from which you could give me, for instance, what they actually paid for the Worthington pump in that station?

A. We had the checks and the invoices that we paid. I haven't got them now, because they were returned to Philadelphia several months ago, after Mr. Miller got through with them.

Q. Then that information is not available here?

A. No, not unless you take it off of the books. Now, we have got the books; all of the books are right here. You will understand, of course, now, I don't know anything about the accounts of the company, because they are not under my supervision; they are not under my care; I haven't got anything to do with that. I furnished the data, you understand, and those things all originated
255 under me here. In other words, they pass my scrutiny, you understand, before they are sent to Philadelphia, but they are sent there, and no other account is kept of them, and checks made and paid from Philadelphia. All of that, however, we are in position to show. The books of the company are here, and the accountant is here. You will have an opportunity to take up all that direct.

Q. You don't know what any of those items cost, and you haven't that information yourself?

A. No, I don't. It seems to me that the invoice, the first cost of the Ada pump was about $15,000, I believe.

Q. That is the Snow pump?

A. Yes. That was without pipe, you understand—auxiliaries. Perhaps some auxiliaries may have been included in that, but without setting, you understand, or anything. I believe maybe the freight was paid on top of that, possibly. I rather recall that the invoice covering the actual boilers here, without stack or steam pipe or anything of that kind, was perhaps $3,200. A few of those items seem to be fresh in my mind, but that is only from memory, you understand, and I wouldn't rely on it as being correct.

Q. Well, have you the amount of money spent by the company in laying the mains which have been laid since——

A. Well, we have that; that is all made up monthly, you understand, and sent in to Philadelphia. That is on our books.

256 Q. That is what I mean, the books will show that?

A. The books will show that.

Q. Now, the Beaver Pond station was constructed before you came here, I believe?

A. Yes, sir, it was.

Q. And none of the work out there has been done since you came here, has it?

A. Well, except the repairs we made on it. The repair work, but the original work was all done before my time.

Q. Well, the repair work was not in the way of renewals, but repairing the machinery that is already there?

A. Well, yes, and renewals. We renewed the boilers since the pumping station was built, and we have reset them, I believe, twice.

Q. You have put in new boilers since you have been connected with the company?

A. Yes; the old boiler went out of use many years ago, and two boilers have taken its place since that time.

Q. That is an eighty-horse-power boiler and a hundred-horse-power boiler?

A. Yes, sir.

Q. What did you pay for those boilers, Mr. McCarthy?

A. Well, I can't say. They were bought before my connection with the company. It seems to me that it was in the neighborhood of $900 for that.

Q. For each of them?

A. Yes. Now, that is only my recollection. I don't recall just what—exactly what they cost, but I think it was in the neighborhood of $900.

257 Q. Mr. McCarthy, you have stated, I believe, that you agreed with Mr. Alvord on his estimate of the value of the springs. Is that correct?

A. Yes, sir. You mean the gravity springs?

Q. Yes.

A. Well, it includes the Ada spring too.

Q. Including the Ada spring.

(No answer.)

Q. Mr. Alvord, I believe, arrives at the value of these springs by capitalizing the amount that it would cost to get water from new

springs in addition to what it would cost to get water from the gravity supplies. That is true, isn't it?

A. No, I don't believe that is quite true. I believe, if I remember his reasoning, he gets the value of those springs by reason of their position to furnish water to us cheaper than from the next most nearest known available source.

Q. And capitalizing that amount?

A. Yes, yes.

Q. You didn't understand me, or maybe I didn't make my idea clear.

(No answer.)

Q. And he arrives at that by assuming a station duty of 40,000,000 feet-pounds per 1,000 pounds of dry steam. What is meant by "station duty," Mr. McCarthy?

A. Well, I don't know that I can go into that very thoroughly. I have made these calculations. I have made several duty tests on our Ada pumping station, but it has been several years ago. Those calculations are calculations used more by mechanical engineers than water works superintendents. The rules governing
258 them are simple, and I could familiarize myself with them and explain perhaps very readily what is meant by it, but it simply means roughly, I suppose, that for each thousand pounds of dry steam there is that much station energy—in other words, a thousand pounds of dry steam is a thousand pounds of water evaporated into steam.

Q. And that would produce 40,000,000 foot pounds of energy?

A. Yes, station energy.

Q. Now, the cost of that is governed by how much coal it would take, naturally, to reduce a thousand pounds of water to that much steam, isn't it?

A. That would naturally follow.

Q. Have you any records of your Ada pumping station that would show what that is?

A. Yes, we have, I believe. I don't know that we have got it in that form, except with those duty tests, you understand. I believe I have got that of our Ada pumping station, one or two tests we made ourselves and some made by the representatives of the Snow Pump Works.

Q. Those tests that you have show that Mr. Alvord's assumption of 40,000,000 pounds for 1,000 pounds of dry steam is not correct, is it?

A. Well, I don't know. I don't recall what our station duty was —what duty we got out of our pump at Ada by way of comparison. I don't know just what they were, I am sure.

259 Q. Mr. Alvord assumes, too, that 5 pounds of water is evaporated by every pound of coal. They it would take 200 pounds of coal to evaporate this 1,000 pounds of water which he applies to the 40,000,000 foot-pounds of energy, wouldn't it?

A. I presume that would be correct.

Q. Yes. And 100 pounds of coal, then, would have a station duty of 20,000,000 foot-pounds of energy, wouldn't it?

A. Well, I haven't checked those things, but I presume that would be right.

Q. Well, if 200 pounds at 40,000,000, 100 pounds would have 20,000,000 on the same basis?

A. Yes. I don't know that that would be true. Of course, it would be true if the plant was designed for that capacity; it wouldn't be true to take a 40,000,000 foot-pound plant and convert it to 20,000,000, because the percentage would run higher as the duty became less.

Q. It would be the same percentage all the time at the Ada plant, wouldn't it?

A. No, it wouldn't. It ain't true of any plant. If you are running a plant in order to get the best economical conditions it is necessary to operate that plant at about its rated capacity, you understand. If you operate a plant that is rated at a certain figured at one-third of its capacity, why its economical operation is cut down perhaps ten per cent.

Q. Well now, how have you operated the Ada plant?

A. Well, we have operated it as we could on the water
260 conditions. That is how I know that it can't be operated running at less than its nearly normal capacity as cheaply as it can be operated at its full capacity, gallon for gallon of the discharge.

Q. Then, if your Ada plant hasn't been operated, for instance, during the year 1915 at its average capacity, it would show less station duty per 100 pounds of coal than Mr. Alvord's estimate would show, wouldn't it?

A. Well, I don't know; I don't know how Mr. Alvord's calculations would compare with our station duty.

Q. I understand that.

A. You mean theoretically?

Q. Theoretically; yes.

A. Theoretically, yes, I presume that would be true.

Q. Now, if your operations at Ada show that you got, during the year 1915, 43,800,000 pounds of energy out of each 100 pounds of coal instead of 20,000,000, Mr. Alvord's estimate that it would produce 20,000,000 must be incorrect, mustn't it?

A. Well, I don't know that that is the condition.

Q. Well, I say, if that is the condition.

A. Yes, if that is the condition.

Q. You can ascertain if that is the condition very readily, can't you?

A. I presume so.

Q. You know you can find out how much coal you used and how much water you pumped?

A. Yes, sir. I might say here, before we get too far past this, that there is no station records that we keep, you under-
261 stand, that will indicate what our station duty is. That is a mathematical insight, you understand, that you get into that part of it. That is going much further than we do. We simply take the number of pounds of coal we use there daily, and we also keep a record of the number of gallons of water we receive,

as indicated by the pump counter. When we get into engine duty, that is a different proposition. That is a very fine, delicate test, made by men that understand the business, and it is usually carried on under precise conditions, and very different from average working conditions, you understand, as found in the ordinary, average plant, of every day use.

Q. But the station duty that you are going to get out of your pumping station is going to be in its every-day use, isn't it?

A. Yes.

Q. And if you do get, as a matter of fact, in your every-day use, out of your pumping station at Ada, more than twice as much station duty as Mr. Alvord calculates on, then his estimate of $50,000 on these springs is based on a false assumption, isn't it?

A. Well, I don't know. Let Mr. Alvord answer that for himself.

Q. You testified in chief that Mr. Alvord's estimate of the value of these springs you approved, and you approved the way he arrived at that, and approved the figures that he made?

A. Yes, from his reasoning.

262 Q. Well now, part of that reasoning was to assume that 100 pounds of coal would make 20,000,000 foot-pounds of energy?

A. Yes; I don't recall just what it was.

Q. And if that assumption is not correct, then the whole reasoning falls to the ground, doesn't it?

A. Well, I can't say that it does. That particular feature of it isn't the whole thing. It depends in a great measure on what kind of pumps you put in to get that duty. You might put in a low-grade pump that could be bought for rather a cheap figure on which you wouldn't get the station duty that you would on a high-grade pump that would cost a great deal more money. I don't know how Mr. Alvord figured this.

Q. How did you figure it?

A. I say I assumed his reasoning, you understand. I had my idea of the value of those springs prior to Mr Alvord's reasoning. My idea was that they were more valuable than he placed them. But taking his reasoning, you understand, without going into the minor details of his method of arriving at it, I was willing to concede that they were worth his figures rather than mine.

Q. Well now then, Mr. McCarthy, for the year 1915, your average daily pumping of water at the Ada spring was 446,000 gallons, I believe?

A. That is the average daily pumping. Well, I haven't got it in that shape here. I have simply got the number of million

263 gallons pumped monthly, and the total for the year. I show here—I have in my memorandum here a range of from 7,000,000 minimum in February to 18,000,000 in June and July. I have got mine stated here in the nearest million; not fractional parts of millions; making a total of 163,000,000 for the year.

Q. All right. We will take those figures, then.

A. Yes.

Q. You pumped, then, 163,000,000 gallons of water out of the Ada station during the year 1915, and you used 1,774 tons of coal for that purpose. Isn't that true?

A. Well, I haven't got the coal consumption here. I haven't taken any note of that.

Q. Well, assuming that you used 1,774 tons of coal to pump that 163,000,000 gallons of water, what was the station duty per hundred pounds of coal?

A. I couldn't tell, Judge.

Q. Couldn't you make that calculation?

A. Not now.

Q. Well, I will ask you if it wouldn't be 43,800,000 foot-pounds per 100 pounds of coal, and 87,600,000 per thousand pounds of dry steam.

A. I couldn't tell you, I am sure; that would all be based on the evaporating power of the boilers. I haven't even got—I don't remember what horse-power ever we developed down there at this present moment.

264 Q. What difference does that make, what horse-power you develop? You have got the amount of coal you used and the amount of water you pumped. Can't you tell how much energy from that——

A. Oh, yes, you can tell how many foot-pounds it took to raise that amount of water that distance, but at the same time you don't get your dynamic in there.

Q. What is the dynamic?

A. That is the frictional resistance.

Q. That would be as much in one place as it would in another?

A. No, it depends on the amount of water the pump is discharging. It is greater as the discharge becomes greater, and less as it becomes less.

Q. In this calculation Mr. Alvord assumes that the lift for the Ada station is 575 feet, which includes, I take it, in this calculation, the force you call dynamic force, or friction. Is that correct?

A. What is the question again please, sir?

(Question read.)

A. No, that wouldn't include the dynamic force—include all of the dynamic pressure. It might include it when the pump was running slow, as it usually runs in the summer, on account of—in the dry season, when pumping a small quantity of water. My memory is that our Ada pump operates against about 235 pounds pressure when discharging a million and a half. Now, in the

265 latter instance, it would be operating against a difficulty—to a vertical height of 808 feet, instead of 575, as Mr. Alvord notes in his report. The actual vertical height between the top of the twin tanks and the floor of the pumping station at Ada is 536 feet.

Q. Including the dynamic force, then, it would be equivalent to a rise of 800 feet?

A. Yes, when pumping at its full capacity.

Commissioner Northcott:

Q. And when pumping at 500,000 gallons a day, what would it be?

A. Pretty close to Mr. Alvord's figure. I think it would exceed that a little. Let me see. I think the pump operates against 240 pounds.

Judge Ritz:

Q. I understood you to say 250.

A. Well, about 235 or forty; I guess 240. I don't mean that either. I mean 240 now is when the pump is standing still, I believe, without any movement at all. Of course, now, as the pump starts to move and is boosting water towards Bluefield, this pressure increases as the speed of the pump increases, until it reaches its maximum capacity, of about 35 or 36 revolutions a minute, when the pressure against which it is pumping equals about 350 pounds.

Q. I understand that, Mr. McCarthy, but I understood you to say that when it was pumping 500 gallons a day it operated against a pressure of 250 pounds.

A. I suppose 250 would be about right.

266 Q. What height would that be equal to?

A. It would be 577, so that must be what Mr. Alvord figured on was the usual——

Q. Then Mr. Alvord's calculation in that regard is about right?

A. About right.

Q. 575 feet. And in his calculation of the proposed Bluestone impounding plant, he uses 425 feet. Is that about right?

A. I presume that is about right.

Q. Then your pump at Ada would operate against 150 feet elevation more than the Bluestone plant?

A. Yes, if those figures are right.

Q. And would, of course, cost more to raise a ton of water 575 feet than it would 425, wouldn't it?

A. Naturally; yes, sir.

Q. Then, calculating between the cost to produce water from Bluestone and to produce water from Ada, it would be in favor of Bluestone instead of Ada, wouldn't it?

A. Well, it would be assuming that there was no plant at either place, you understand. Of course, we have got a plant at Ada; we operate from Ada. Now, we don't know what we have got to go against in Bluestone. This is assumption, of course, and we are assuming——

Q. And your report of $50,000 valuation is all based on that assumption, isn't it?

A. On that assumption, yes.

Q. And taking that assumption to be true, the Ada plant,

267 instead of being a valuable asset, it is the reverse, isn't it, as compared with the Bluestone proposition?

A. No, I think not.

Q. It would cost more to get the water from there than from the Bluestone plant?

A. Yes, but you get better water.

Q. That is the difference?

A. You get spring water in one instance; you get creek water in the other instance.

Q. You don't base your idea of the value of the Ada springs on the difference in cost between getting that water here and the Bluestone water at all?

A. I say I agreed with Mr. Alvord here, after reading his reports, that his figures were all right.

Q. Well now, Mr. Alvord's report is, as stated in the beginning, on this theory, to capitalize the difference between the cost of producing water at one place and the other place. That is true, isn't it?

A. Yes.

Q. And he fixes the value of the springs on that basis, doesn't he?

A. Yes.

Q. Now, if you have to raise the water 150 feet further from the Ada springs than you do from the Bluestone plant, it would cost more money to produce water from Ada than it would from Bluestone, wouldn't it?

A. Well, I don't know that that is a fair comparison.

Q. Isn't that the exact comparison Mr. Alvord made upon
268 which all of his calculations are based?

A. No, I rather disagree with you, Judge. In the first place, Mr. Alvord has figured a much larger supply, you understand, from Bluestone than we get from the Ada. I think that should be taken into account too.

Q. Well, I suppose he took that into account, didn't he?

A. Well, he may have done it.

Q. And didn't he arrive at the conclusion, and isn't it stated in his report, that it would cost $84.70 per million gallons to produce water from Ada, and $71.75 to produce it from Bluestone, per million gallons?

A. Yes.

Q. Filtered water from Bluestone. That is his calculation here, isn't it?

A. I presume that is true.

Q. And his conclusions are based upon that calculation?

(No answer.)

Q. Now, if that is true, that it cost eighty odd dollars per million gallons to get the water from Ada, and seventy odd dollars to get the water from Bluestone, why is the Ada spring more valuable than a spring of the same kind on Bluestone would be?

A. Well, I don't believe it would be any more valuable.

Q. It wouldn't be as valuable, would it?

A. Well, if conditions are the same—that is, the condi-
268½ tion of the water is the same, I would say on account of having to pump through less vertical height, that the Blue-

stone spring would be the most valuable, other things on the same plane.

Q. And if you had a plant on Bluestone, such as has been proposed by Mr. Alvord, adequate to supply the needs of the city, the Ada plant would immediately become obsolete, wouldn't it, as a matter of fact?

A. Well, if you had, yes.

Q. If you spend this $240,000 that you talk about?

A. Yes, but I doubt very seriously whether a plant of that size could be had on Bluestone for that money. I believe Mr. Alvord's figures are a little bit too small.

Q. Well, whatever it might cost, assuming that it would cost a million dollars, that is not material.

A. Mr. Alvord's figures are based on four miles from Bluefield. He would have to go six or seven, probably, to begin with; and the conditions under which he would impound would be much more serious at the place which he proposed, on account of the cavernous condition of that particular section.

Q. Whatever the cost might be of such a plant, when you got that plant the Ada plant would be obsolete, wouldn't it, from the very fact it would be to- expensive to get that water to Bluefield?

A. Well, no, I don't think so. It might be cheaper at some time to operate the other plant, but, at the same time, no water
269 company in the world ever threw out a plant, you understand, simply because you could pump from one plant cheaper than the other. You understand that this Bluestone plant is for no other purpose at all only to take care of the needs of the city of Bluefield at times when the other plant, not only the Ada plants, aren't able to supply; because there is not the water in Bluestone river, and it can't be impounded, to supply the needs of this city by itself—that is, within human possibility and with anything like a reasonable cost. I explained to you that the railroad company was short of water long before they put in their water supply on the Elkhorn mountain to fill their engines with, taking the water from Bluestone they have had to impound themselves. Now, it is only the surplus waters that we would be able to take care of and to use from Bluestone; and the valley in which this impounding would be done is too narrow and too small to impound a quantity sufficient and large enough to take care of the needs of this city. It couldn't possibly be done.

Q. You would only have to use this impounded water during dry seasons?

A. Yes, but understand, you are isolating the Ada plant; you are putting that out of commission.

Q. Yes. You would only have to use this impounded water during dry seasons?

A. Yes, sir.

Q. Now, wouldn't the ordinary flow of Bluestone during
270 wet seasons, without any impounding, furnish sufficient water?

A. The flow of Bluestone through four or five months of the year

is only large enough to take care of the railroad company's needs. Now, at this particular time, Bluestone river is very much higher and very much more water in it than the railroad company needs or that we would need, you understand, but that don't cut any figure; we don't need that water.

Q. Now, that is the very water that you would impound and keep till you did need it?

A. Yes.

Q. And the flow of Bluestone during the year is ample to take care of all of the needs of the city of Bluefield and the railroad and everybody else, isn't it?

A. Yes, if it could be impounded it would be.

Q. And distributed over the year?

A. If it could be impounded and was distributed; yes.

Q. What do you calculate would be the capacity of this impounding plant you are going to put on Bluestone?

A. Well, we figure on taking care of the city for twenty years, I presume. I think it would be a bad plan to figure on less than that. If the city continues to grow as it is now—as it is now growing, I presume that the plant by that time would have to furnish right up to its full capacity.

Q. Well, what would be the capacity?

A. Two million gallons a day.

271 Q. This plant you were figuring on on Bluestone would furnish 2,000,000 gallons a day?

A. Yes, sir, during dry weather.

Q. And during wet weather it would furnish that much more than you need?

A. Just during wet weather. It would interfere with the Norfolk and Western use of water.

Q. If you could furnish 2,000,000 gallons during the dry weather today, why couldn't you furnish it during the wet weather?

A. We may be working on the wrong hypothesis, but I understand where another party has the riparian rights to a stream we would only be entitled to the excess waters of that stream.

Commissioner Northcott: Waste and unappropriated.

A. Yes, waste and unappropriated. So that I don't know—You will understand, too, that really cold weather in this part of the country, where these streams head up into the mountains, are dried up during the winter seasons, very much the same as they are dried up during the summer by real dry weather. We find that is very much true of our springs; one week of real cold zero weather will dry up our springs very much like a real dry spell during the summer season will do; and that applies to our streams, because they are supplied very largely from these springs.

Judge Ritz:

Q. You don't have a week of zero weather every ten years

272 in this country, do you?

A. We are frequently handicapped by cold weather in this country. There are several seasons of it each year. It don't make

any difference if it only lasted a week, if we got out of water during that time it would be serious.

Q. But this impounding plant could be used to supply that deficiency then just the same as it could during dry weather in the summer, couldn't it?

A. It could be; yes.

Q. Mr. McCarthy, referring to the Beaver Pond springs, there is an item for pumping station and other appliances at that spring. That has been discontinued, hasn't it?

A. Since the inventory has been taken it has been discontinued.

Q. And it is now entirely obsolete?

A. Now, I will say that the equipment there has been discontinued. Of course, the spring is not obsolete.

Q. Oh, I don't mean the spring; the station.

A. Yes, the station only.

Q. I understand you are still pumping from the spring from another station?

A. Yes, sir.

Q. But the station is obsolete?

A. That is true.

Q. And you are pumping that water now with electric power?

A. Yes, sir.

Q. Is that very much cheaper than pumping it with the steam power that you formerly pumped it with?

273 A. Well, we haven't had the opportunity to test that out yet. I am not able to say which is going to be the cheapest. I presume there may be a little advantage—or, at least, I am told now by the Appalachia company that they will be able to furnish us power cheaper than we could furnish it by steam. I believe they can furnish us power cheaper than we could furnish power there, because we had to haul the coal; but I don't know how it will compare with our steam plant at Ada. I haven't been able to make any comparisons yet. We have no measuring devices on the pump; we don't know how much water we pump. We have a meter ordered for that purpose, and expect it in every day, and after the installation of this station meter we will be able to tell pretty closely what the difference in the cost between the two stations will be.

Q. What is the rate at which they furnish you power for that plant?

A. Well, really I can't say. I think perhaps it is 5 cents a kilowatt for the first 500. You asked me what rates we were paying for this current. I might say that the operation of this plant is not a proper item in connection with the plant of the Bluefield water works. That plant is really a plant that is located in the state of Virginia, and it is and will be operated by a different company.

However, I have no objection to answering the question as
274 to what rate we pay for this current on this contract. I can't recall exactly what the figures are, but my recollection is it is from 5 cents a kilowatt for the first 500, and 2 cents a kilowatt for the next 10,000, and a cent and a half a kilowatt for the following 40,000, possibly.

Q. And you never have gone beyond that yet?
A. No, we never have reached that.
Q. You say this plant is operated by a separate company?
A. Yes.
Q. But it furnishes water to the Bluefield Water Works and Improvement company?
A. It furnishes water to the Bluefield Water Works and Improvement company.
Q. And the cost of operating this Beaver Pond plant you have included in your items for expenses all the time, haven't you?
A. Well, the cost of operating the Beaver Pond plant has been a proper charge to the Bluefield water works; they don't operate that plant.
Q. Now, Mr. McCarthy, the Beaver Pond spring doesn't belong to the Bluefield Water Works and Improvement company?
A. Yes, sir, the Beaver Pond spring belonges to the Bluefield Water Works and Improvement company.
Q. And the Bluefield Water Works and Improvement company employes this other company to pump that water for it to Bluefield?
A. Yes. But in addition to the waters from another spring that belongs to another company.
275 Q. In other words, the other company was simply organized by the Bluefield Water Works and Improvement company in order that they might exercise the right of eminent domain in Virginia?
A. I think so; I think that is the situation.
Q. And that is really a component part of the Bluefield Water Works and Improvement company?
A. Well, it is a separate company. We didn't necessarily have to set ourselves up as a public service corporation in Virginia, because we had nobody there to supply water to—at least, at the present time—but one of the things that we did want to avoid was to—the reports that are made to the Interstate Commerce Commission. We didn't want to get hooked up between the two states so as to have those lengthy and unnecessary combinations, you know, that would be a source of annoyance.
Judge Sanders: I wanted to correct that statement that it was organized to exercise the right of eminent domain.
Q. You have never exercised that right; that has all been by agreement of the parties?
A. Yes, sir.
Q Then the fact that there is a separate corporation over there is not at all material, so far as fixing these rates is concerned?
A. No. Because the Bluefield Water Works and Improvement company has got to pay that expense.

Commissioner Northcott:

Q. You say you have never gotten the benefit of this in-
276 crease in plant at the Beaver Pond Bailey plant?
A. Well, not properly at this time. We will be in posi-

tion to put the plant in complete commission in a few days. To make the story short, I will say, to begin with, that the control panel that operates the pump is not satisfactorily adjusted to work automatically, to begin with; and neither has the Venturi meter that we ordered from the commission been placed in position. It has been ordered for a number of months, but it has not been received yet.

Q. How much additional supply would that give you?

A. I presume it would give us the combined springs, about 400,000 gallons in dry weather.

Judge Sanders:

Q. In addition to what you are getting now?

A. Yes. I say combined springs meaning the Beaver Pond spring and the Bailey spring, would give us about 400,000 gallons additional to the Ada springs and the gravity springs.

Judge Ritz:

Q. But you have been getting some of the Beaver Pond spring?

A. Well, very little; just a little, because we have been running it some, but not very much.

Q. That 400,000 gallons would be practically in addition to the present supply?

A. Yes, yes.

Q. Now, Mr. McCarthy, the water pumped from Ada is procured from springs, I believe you stated, up in East River Moun-
277 tain—at the foot of East River Mountain and up in the mountain?

A. Yes, sir.

Q. What is the elevation of those springs as compared with the Ada pumping station, and as compared with the twin tanks?

A. The elevation of the twin tanks is 2,810 feet. The elevation of the Ada pumping——

Commissioner Northcott:

Q. What is your base line on that?

A. That is above sea level. The elevation of the Ada pumping station floor is 2,274, I believe. The elevation of the Ada spring would be about 2,360 feet. I have measured; I don't see it shown on here. Yes, here it is; 2,356 feet.

Judge Ritz:

Q. Now, the other springs, up in the mountain, from which water is pumped at Ada, what is the elevation of those springs?

A. The elevation of the No. 18 spring, I should say, is 2,795 feet. The elevation of No. 17 spring, 2,811 feet. The elevation of No. 16 spring is 2,774 feet. The elevation of spring No. 19 is 2,947 feet. The elevation of No. 14 spring would be 2,932 feet. The elevation of No. 13 spring would be 2,828 feet; and the elevation of No. 12 spring would be 2,929 feet.

Q. Then all of the water from those springs is collected at the lower level at Ada and pumped from there to the twin tanks?

A. It is collected at the Ada spring, and it flows with the
278 waters of the Ada spring to the Ada pumping station, and is then pumped to the twin tanks.

Q. Those springs are practically on the same level with the twin tanks, aren't they?

A. Well, they are not—they are some higher.

Q. And some lower?

A. Yes, some of them are—there seems to be four of them higher and two of them lower, and one practically at the same elevation, 2,811 feet.

Q. Mr. McCarthy, would it be practicable to collect the water from those springs at a point near the same elevation as the twin tanks and pump it from an electrically operated station from there, without allowing it to run to the Ada spring and then pump it up the hill?

A. No, I don't believe it would be.

Q. Would it be practicable to operate the Ada pumping station by electric power?

A. Well, I suppose that it could be operated electrically; but it might be understood that when this Ada station was built there was no thought of electric power here such as we have got now. We had no idea, and the Ada station was built and designed as a steam station. It was also built and designed originally to furnish electric power to Beaver Pond spring, to furnish that with current to operate electrically if at any time we chose to do it, or maybe any other distant point that we might wish to furnish current and generate it ourselves.

Q. You say you designed the Ada station for the purpose
279 of generating power to be furnished to Beaver Pond?

A. Yes, sir, that was the intention. There was no thought —this idea of harnessing New River for power wasn't even dreamed of at that time, so far as my knowledge takes me.

Q. Now, what I want to ascertain is, would it be practicable to convert the Ada station into an electrically operated station? By "practicable" I mean would it save money in the operation sufficient to justify the conversion of it?

A. Well, I can only say this, that I have had Mr. Gregory, who was an electrical engineer employed by the Appalachian Power Company to solicit new business, to see me a number of times with regard to furnishing power for this Ada station, and I have explained to him the conditions which we operated under, the equipment that we had there, and what it cost us to operate; and he was never able to state positively that he could make any particular difference in the cost of operation by electric current over that of our steam plant. That is, the figures that he gave me were not at all figures that would indicate to us that it would be cheaper to operate electrically there over that of a steam plant. I would say that we have got a strictly up-to-date steam plant. It is small, it is true, but it is a very good plant, and I believe it is an economical plant to operate. We

get our coal cheap, and the expense of operation is not a big
280 one, and the Appalachian Power Company has never made me any figures—— I have given them the cost down there, what we were doing and what it cost us, and he has always taken them and said, "Well, I will let you know later;" and while I have seen him later, he has intimated in both instances that they had nothing that was particularly attractive to us, and the matter was dropped; and so I presume that on account of the distance that a steam plant would be nearly as economical to operate as an electric plant at that point.

Judge Ritz: Well, I think that is all I want to ask him right now.

Commissioner Northcott: I just want to ask Mr. McCarthy one question.

Q. What is the elevation of—— What is this new station, the subsidiary company?

A. The John A. Bailey spring.

Q. What is the elevation of that spring?

A. Beaver Pond, I would say, would be about 2,443, I would think. It would be 20 feet lower, I suspect, than the Beaver Pond spring, so that the John A. Bailey spring would be 2,424.

NOTE.—At this point, it being 12.30 o'clock p. m., a recess was taken until 2 o'clock p. m. of the same day, at which time this hearing was resumed as follows:

281 Judge Ritz:

Q. Mr. McCarthy, there are some items in this inventory that has been filed under the head of "improving springs." Do you know, or do your records disclose, what the actual cost of the improvements made to the springs was?

A. Now, we have a statement here, Judge, that will enlighten us a little in that respect. Now, from 1909, including the year 1909, which begins on January 1st, 1909, we spent on springs, rights of way, and purchases, $4,689.03; 1910, we spent $11; now, 1911, we spent $1,775; in 1912 we spent—Well, it don't show anything on 1912. None shown in 1913; none shown in 1914. Now, that is additional to plant, I suppose you—That is not for maintenance, you understand; that is just original investment.

Q. That is what I am driving at.

A. That is for the gravity springs alone.

Q. Now, what springs were improved with those amounts, and what improvements were made to them?

A. Well now, I couldn't give you that.

Q. You were in charge of the company's affairs during that time?

A. Yes, sir. We worked on a number of those springs, you know, at the same time. That is, I mean to say that we were working on a series of them.

Q. Well, what ones were they?

282 A. Well, during the time we worked on the Ada spring, the mountain springs, and the Ada gravity series—new springs.

Q. Now, Mr. McCarthy, at the time you went to work as superintendent of this company, was there any improvement done to the Ada spring?

A. Not much, no. The water was being taken from Ada spring, but there was no especial improvement at the spring property itself; a little, of course, but it was small; no large investment there. That question, of course, would not include the dam or reservoir.

Q. No, I understand; I am just talking about the spring.

A. Yes.

Q. And since that time have you made any improvements at the spring?

A. Yes, very much.

Q. What improvements have you made there since, and at what cost?

A. That would be maintenance.

Q. No, I don't mean maintenance charges. I mean the items that are included in this inventory.

A. Well, we have—I don't see that the gravity springs has been separated from the Ada spring. I believe our improvements here are shown as improvements to springs generally, and we have nothing separated. We have spent, however, on the gravity springs and improvements, which may include the Ada spring maybe, $33,500.

Q. Which you have spent on the improvement of the springs?

A. Yes, sir.

283 Q. Is that all of the springs you have?

A. Well, I take it that it is; I take it from this statement.

Q. Now, what does that item of $33,000 include, getting it in terms used in this inventory?

A. Well, it would include the fencing of the spring property, the ditching, infiltration lines, the placing of these concrete boxes or basins around the spring, and the clearing of the land and the laying of the pipe from the mains to the spring. That would include all of the work done at the springs to bring them up to where they stand at this time.

Q. Now, does that include the purchase price of the springs themselves?

A. No, I suppose not; I would hardly think so. I think this first item that I gave you would be the springs and rights of way, which amounted to, in the years that I have mentioned since the first of the year 1909 up to the present time, $6,475.

Q. That was for the purchase of the springs and rights of way?

A. Yes.

Q. Now, what springs and rights of way did you purchase with that $6,000?

A. Well, we purchased the Estill Bailey spring, near the Ada pumping station, the one put out of business with sewage, and we purchased——

Q. How much did you give for the Estill Bailey spring?

A. I think about $1,500. I am only—I am just guessing
284 at that. That is all shown, I think, in Mr. Alvord's report, but I think it was about $1,500. Now, we purchased a number of springs; I don't recall the number; six or seven, I believe, in the vicinity of Ada spring above the Ada spring, the waters of which now flow to the Ada spring by gravity.

Q. How much did you pay for those?

A. Well, they were varying amounts; I wouldn't be able to say. I have no memorandum with me. I have no idea; from a few hundred dollars up each.

Q. From whom did you make those purchases?

A. We bought three from Thomas P. Morgan; we bought one from R. H. Bailey. I believe we bought one from—(Witness refers to map.)—That last one I gave you was Robert P. Bailey, wasn't it?

Q. Robert H. Bailey.

A. Robert H. Bailey. The next one from B. P. Wilson; the next one from Walter Bailey.

Q. Now, did you purchase any other springs during that time?

A. I don't recall that we did, unless perhaps it was the Jarrell spring. That might have been bought in the year 1909; I am not positive about that.

Q. Do you know what you paid for that?

A. I believe we paid $4,000 for it.

Q. That was for the farm and the spring?

A. No, no. No, just the spring and an acre of ground.

Q. Then you subsequently bought the farm?

285 A. No, we didn't buy the farm. We didn't buy the Jarrell farm. We don't own any part of it except the acre of ground.

Q. Where is the Ruble farm?

A. The Ruble farm is below the Jarrell spring, on the Jarrell spring branch. It was bought to secure the water rights on the branch.

Q. From the Jarrell spring?

A. From the Jarrell spring.

Q. Mr. McCarthy, the item of $33,000 that you mentioned as being the amount spent for improvements to springs, did that include any of the cost of maintenance of the springs during the time?

A. No, sir, no, sir.

Q. Now, that includes the clearing of the ground, the putting in of the concrete basins, or whatever they are called, the infiltration lines, and the lines leading from the springs, as I understand, to the mains?

A. Yes, and perhaps various other sundry articles, you know, that I haven't got in mind at this time.

Q. Now, what do you mean by the item of the pipes leading from the springs to the mains? Take the Ada spring, for example.

A. Well, the Ada spring I didn't have in mind when I said that.

Q. Well, I was just giving that to get an idea of what was meant by that.

A. Yes. There would be very little of that at the Ada
286 spring—a very small connection between the spring itself, where it issues from the ground, and where it enters the pipe; you know; but what I had particularly in mind was the work done away from the springs, you understand—away from the spring properties. I am not sure now whether that item of pipe-laying from the spring proper to the trunk pipe line would be included in that statement. I don't believe it would. I believe that would be included in pipe lines.

Q. That is what I wanted to get. You have an item of pipe lines, in your statement, haven't you?

A. Yes.

Q. Now, the lines leading from each of these springs. As I understand, the water from each of these springs is collected into a basin? That is correct, isn't it?

A. Yes, sir.

Q. And then conveyed from there to your main?

A. Yes, sir.

Q. You have, for instance, a gravity spring main that runs out to these gravity basins?

A. Yes, sir, trunk main.

Q. What I wanted to get at was whether that item from the gravity spring to the trunk main was included in the spring item.

A. No, sir, I don't believe that is included.

Q. That is in the pipe-laying item?

A. That is in the pipe-laying item.

287 Q. Then the item that you gave as $33,000 would correspond with the items 3, $14,645; 4, $19,231; 5, $137. Those three items are the items that are included in your item which you have just given as $33,000?

A. No, I would hardly think so. You see, I have given you that item of $33,000, but it only covers the period from 1909 up to this time, while, of course, those gravity springs, many of them, were in existence long before that.

Q. Well, how much was spent before that time?

A. Well, I couldn't tell; I don't know about that, I am sure.

Q. And you don't know how much was spent on them since?

A. No, I do not. And I am not certain—I am not positive about the lines, you understand, whether these individual lines leading to these springs are charged to the spring improvement itself or not. I would have to look into that before I could answer that intelligently; and I don't remember how Mr. Alvord accounts for that, whether he has a separate item for it or whether it is charged in with the spring.

Q. Have you any information as to the cost of the pipe line from the Ada spring to the city of Bluefield?

A. No, I have not. We have it, too, I suppose, but I haven't it available just at this moment.

Q. You have a record of that?

288 A. Well, I don't know whether we have or not. We have the books of the company here, from which I presume that data can be given, but I haven't got it so I could give it to you at the present time.

Q. Have you any data which would show the total cost of all the pipe lines of the company?

A. I haven't got it. We may have it, but I myself haven't got it at hand.

Q. Mr. McCarthy, you stated that in your judgment it would not be practicable to collect the water from the gravity springs above the Ada spring at a point approximating the elevation of the twin tanks and pump it from that point to the twin tanks. Why would it not be practicable?

A. Well, the flow from those springs is irregular; it would be rather difficult to put in a pump, I suppose, that could be operated economically. I mean by that a pump and a pipe line from it that would take the water from the springs in fairly wet weather would be much to- large for it in dry weather, and the dry weather flow is what really figures with us, and the amount would be too small, in my opinion, to put in a pump for that purpose and pipe line.

Judge Ritz: That is all, unless I have omitted something.

The Witness: I wanted to make one correction, if you please. I stated that I believed the Jarrell spring was bought in 1909. I believe it was bought several years earlier than that, and instead of
289 paying $4,000 we paid $2,000 for it.

Commissioner Northcott:

Q. Mr. McCarthy, what percentage of your services here are metered?

A. I haven't figured it up right lately, but I think it is somewhere in the neighborhood of seventy-one or two per cent.

Q. Are all the large services metered?

A. All of the larger services are metered, yes.

Q. And those that are not metered are the poorer classes of domestic consumers?

A. Yes, sir. We make it a rule to try to meter all those that are paying a dollar or more.

Q. What is your policy? Is it to eventually meter all the services?

A. Yes, sir.

Q. Isn't it your opinion that that would save a great deal of the demand?

A. Well, we figure now that there wouldn't be so much saved, by reason of the fact that most of these services that are not metered are services that are—that furnish water to people that have a hydrant in the yeard, for instance, where the use or waste of water is not excessive, and where we could easily check the waste of water. We think there is not much to be saved. We have saved a great deal by the installation of meters on the ordinary consumers. I think that is the only proper way to sell water, and I hope to see the day

when it will be metered soon; but just what saving would be effected by a complete metering I wouldn't be able to estimate just
290 at this time, but in my opinion it wouldn't be very large.

Judge Ritz: There was one thing I wanted to ask Mr. McCarthy that was suggested.

Q. You stated, Mr. McCarthy, that the plant at Ada that you put in for impounding the excess water supply there, you had been compelled to abandon by the city?

A. Yes, sir.

Q. I wish you would state who it was that compelled you to abandon it?

A. There was an order issued by the board, come to us through Mr. Kahle—I mean by the "board" the Board of Affairs of the city of Bluefield, who were the officers in charge of the city of Bluefield at that time.

Q. Have you that order?

A. No, I can't say that I could produce it, but we have got it, I presume.

Q. What did that order require you to do?

A. It required us to empty the water in the reservoir and not refill it until we were further ordered to refill it.

Q. And that was because it was thought to be polluted, wasn't it?

A. Well now, the order came to us arbitrarily. So far as I know, and I kept pretty close tab on it at the time this was done, there was no investigation made by the city as to the sanitary condition of that water. I myself believe that the water was all right; I don't think there was a thing wrong with it; and I further believe that the water can be maintained in this reservoir in good condition.

Q. You think Mr. Alvord is mistaken when he said it
291 ought to be filtered?

A. I don't recall that Mr. Alvord made such a statement. I do recall that he said in his opinion that the Ada water perhaps in the future would have to be filtered.

Q. Don't you recall that Mr. Alvord made the statement that water to be used from that impounding plant down there should be filtered?

A. Well, there would be no objections to filtering it. We will filter it, if the people want it filtered. I am not arguing against a filter, you understand; we will filter every bit of it if the people want it.

Q. And wouldn't that have disposed of the complaint of pollution of this water?

A. I presume that if there had been anything found wrong with the water that, of course, a filtration plant would have remedied it, but at the time this was done there was nothing wrong with the Ada water supply. I recall here distinctly, after putting in this Ada plant down here and erecting the two twin tanks, we immediately maintained here two separate and distinct water systems, so to speak. We had a—the gravity supply system, you understand, feeding into the Bland street tank, the Ada springs supply system, feeding into

the twin tanks, at a difference in pressure amounting to 35 pounds, say. Now, to a portion of the city of Bluefield those two supplies were entirely separate and distinct. The South Bluefield
292 people got no part of the water that was furnished this city by the Ada supply, neither did the East End, south of the railroad here, get any part of the water supplied by the gravity springs. A great deal of the fever conditions that existed here in Bluefield, continuing up till about a year ago, was in South Bluefield, you understand, particularly, and I believe there was really more fever in South Bluefield than there was in this other section of the town. Now, the trouble at this time, you understand, was as deep seated in South Bluefield, you understand, as it was in any other quarter of the town, leading me to believe that the condition of the water had nothing whatever to do with it. Further, I might say that after the installation of the city sanitary sewer through South Bluefield by way of Adams street and Graham that typhoid fever has been practically eliminated from this city; and I can further add that during the times fever was so much talked about in this city that I could see sewage with fecal matter in it floating on Adams street, the main thoroughfare of South Bluefield today.

Q. As a matter of fact, Mr. McCarthy, about the time that you got this order to drain the Ada springs reservoir there was a severe epidemic of typhoid fever in the city?

A. No. I don't believe we ever had a really severe epidemic of typhoid fever in this city, not considered as an epidemic. Typhoid fever was prevalent here, and it was common.

293 Q. We had three or four hundred cases here out of a population of 12,000?

A. Oh, no. We may have had three or four hundred cases in several years.

Q. I mean at one time.

A. I never heard of so many. I remember there was a good many; but South Bluefield was being supplied with a water the purity of which, I believe, couldn't be questioned, and it had just as much typhoid fever, or perhaps more, than the east end of the town, the supply to which was said not to be so good. I kept particular tab on that through the physicians. They had as much to do with it as anybody else. They seemed to believe that the water had something to do with it.

Q. As soon as they ceased using the water from this impounding station the typhoid fever ceased?

A. Oh, no, typhoid fever was about,—I believe there was just as many cases up to two years ago as there had been at any one particular period of the history of the city.

Q. When did you discontinue using that Ada spring reservoir?

A. Oh, I don't know. I believe about 1909.

Q. About seven years ago?

A. It was the year—I think a year after the report was made by a man named Stabler. A Government expert came in here and made a report on this water supply. I don't remember whether he

made that in the year 1908 or not, but it seems to me it was, and this reservoir was emptied the year following.

294 Judge Ritz: That is all.

Redirect examination.

Judge Sanders:

Q. Was any of the water from the impound of the Ada spring furnished to South Bluefield that you have referred to?
A. Never was, to my knowledge.

Judge Ritz: There is just one question, Judge, before you go on.

Cross-examination (resumed).

Judge Ritz:

Q. Prior to 1909, how many people were there living in South Bluefield?
A. Well, there were quite a number getting this water. When I stated South Bluefield I meant everything south of where the Government postoffice stands here now.

Judge Sanders:

Q. You say "this water"; you mean the gravity springs from East River Mountain?
A. Yes, sir.
Q. None of them got the water from the Ada springs?
A. No, sir.

Judge Ritz:

Q. Those people you speak of living in South Bluefield are largely the colored population living in huts and shacks just beyond the divide?
A. Oh, no; there was a good many white people living in South Bluefield then.
Q. There wasn't anybody living in what you know as South Bluefield now, was there?
A. Oh, yes, sir. Jefferson street was well built up; North
295 street had houses on it, a good many; Bland street was pretty well build up, a good many houses; and the same number of houses on Preston street that there is now.
Q. Nearly all the houses on Preston street were built by Oliver in the last year, weren't they—last two or three years?
A. Oh, no; Oliver has built a good many next to Bland; but the houses that run away back maybe a quarter of a mile from Bland there has not been many additions there.
Q. There are none of those connected with sanitary sewers?
A. I don't know.

Q. And there are none of these houses up here in Cooperstown and Jones' Hollow and all those places that were supplied with the gravity spring water that were connected with the sewer then or since?

A. I don't know how many were connected with the sewer, but I do know they were connected with the gravity spring water.

Redirect examination (resumed):

Judge Sanders:

Q. Mr. McCarthy, you have stated that the value of the property for tax purposes has been valued at $190,000. Who placed that valuation on the property?

A. Well, the Board of Public Works, I believe, have the authority for assessing public utility property.

Q. Do you know who returned, or do you know whether
296 anybody returned, this value to the Board of Public Works?

A. I don't think that value was returned by anyone connected with the company.

Q. Were you present at the time this assessment was made by the Board of Public Works?

A. No, sir.

Q. Were you there at any time, and did you take this matter up with the Board of Public Works at any time?

A. I have appeared before the Board of Public Works in several instances pleading with them not to raise this assessment any higher.

Q. What reason did you give for not wanting it raised?

A. Well, I concluded that for a company with the capital that this company had, and the small return they were getting on it, that they were paying enough taxes on it, you understand, with the present valuation, or the valuation at that time, the time I appeared before the board, figuring, as I thought, that the returns on a property on the capital invested in a piece of property really sets the value on that property; and we were only assessed—it is supposed to be assessed at least at its true and actual value. I assume that that makes its true and actual value for assessment purposes.

Q. Was that the way you presented that matter to the Board?

A. That is the way I presented that matter to the Board.

Q. Then, as I undersand it, if a larger return is yielded
297 to this company, the tax value will be increased proportionately?

A. I would say so; yes, sir.

Q. And in presenting this matter to the Board, you did so on the valuation which you thought, at the existing water rate, would yield a fair return to the company?

A. Well, I can't say that I did that. I thought the valuation was too high; I mean by that that we were paying really more taxes than we should pay, taking into account the amount of money that was invested by the company and the small net return we were getting.

Q. I don't know that the record is quite as full on this question as I desire it. You have been asked with reference to the pumping

station at Beaver Pond, as to whether it is now in use. I will ask you to state fully the facts in regard to this pumping station, which you say is not now in use—that is to say, why it is not in use, and how that water is brought here to Bluefield.

A. The Beaver Pond pumping station is not in use at this time. The water from the Beaver Pond spring, that was originally pumped by the Beaver Pond pumping station, is now allowed to flow by gravity about 2,600 feet westwardly to the John A. Bailey spring, where we have erected a small pumping station with which we expect to pump the waters from both these springs, the Beaver Pond spring and the John A. Bailey spring, into the city of Bluefield. I would say that this necessitated the moving or transfer of a
298 portion of the Beaver Pond pipe line, reading from the Beaver Pond pump toward the city of Bluefield, was taken up and relaid to make this change possible; and I might say that the right of way where the Beaver Pond pipe line was formerly laid is still owned by us occupied by us by a similar line, which will be used, and a portion of which is in use, to supply any needs that might be or might occur along that line where we now have no pipe line.

Q. Then the Beaver Pond spring is in West Virginia, and the John A. Bailey spring, to which that water is taken by gravity, is in Virginia?

A. Yes, sir.

Q. And your pumping station is at the John A. Bailey spring?

A. In Virginia; yes, sir.

Q. So instead of your pumping station being at that spring, it is taken from that spring to the John A. Bailey spring, and your pumping station is there by which the water is brought to Bluefield?

A. Yes, sir.

Q. And at practically the same cost. What have you to say about that?

A. Well, I would say probably at less cost.

Q. About how much less?

A. Well, we haven't had the pump long enough to figure on the cost, but it saves the item of coal haul which we had to Beaver Pond, about two and a half miles, over a very rough road. I imagine the operating costs at the two stations should be materially less, taking into account the amount of water pumped than
299 at the Beaver Pond station.

Q. Then that would be an item taken into account of expenses. Has this change increased or decreased the value of the company's property, is what I want to get at.

A. The amount of money shown in the Beaver Pond property in Mr. Alvord's inventory is so small—The property is listed at its value and then depreciated greatly. The new installation, you understand, is practically on the Virginia side, so that it will not materially add to the property of the Bluefield water works.

Q. Well, but whether in or out of the state of Virginia, as I understand, it is used in connection with this water supply?

A. Yes.

Q. And I believe you said that it doesn't materially change the values as fixed by Mr. Alvord?

A. No, not in this company. The company, I understand, I suppose the capital cost would be about twelve or thirteen thousand dollars, possibly.

Q. Well, that was capitalized and organized, as I understand you, for the express purpose of producing and furnishing water from these springs?

A. It was, and furnishing it to the city.

Q. And that should be added to the value of the company's property for rate making purposes, should it not?

A. Well, I don't know about that. I am not clear on that point. Of course, I believe the operating costs ought to be figured
300 in on this new plant, because the Bluefield Water Works and Improvement company will have to pay those operating costs as they get the water, I understand. That will be in the way of a rental, I suppose, that the one company will pay to the other to keep up the plant with.

Q. Are you a director of the Bluefield Water Works and Improvement company?

A. I am.

Q. Are you a stockholder?

A. Well, I am a qualified director; I have one share of stock.

Q. A qualified stockholder, you mean?

A. Yes.

Q. You own one share of stock, and that was transferred to you for the purpose of qualifying you as a member of the Board of Directors, as a director of the company?

A. Yes, sir.

Q. You have no beneficial interest, then, in the water company?

A. No, sir, not as a stockholder.

Q. What salaried officers has the Bluefield Water company?

A. Mr. John M. Wirgman is president; Mr. H. M. Kurtz is secretary and treasurer; and I am the superintendent, and Mr. A. L. Rhodes is the cashier, and Mr. William H. Triol is the bookkeeper.

Q. Are either of these officers named by you stockholders of the Bluefield Water Works and Improvement company?

A. Mr. Wirgman, Mr. Kurtz, Mr. Triol, and myself are stockholders and directors.

Q. What stock do you own—qualifying shares?

301 A. Qualifying shares; yes.

Q. Each of you owns one share of stock?

A. Each owns one share of stock.

Q. Transferred to you for the purpose of qualifying you to become members of the board of directors?

A. Yes, sir.

Q. Mr. Rhodes, is he a stockholder?

A. No, Mr. Rhodes is not a stockholder.

Q. Please give the salaries of each one of the officers named by you.

A. Well, I can only do that for myself and Mr. Rhodes; I am not

qualified to state what the others are. My salary is $2,400 a year, and Mr. Rhodes' is $1,800 a year.

Q. Are those reasonable salaries to be paid for the services rendered to the company?

A. I consider them so.

Q. I wish you would state whether or not a salary of $2,500 would be reasonable to be paid as a salary to the president of the company, in your opinion.

A. I would consider it a very reasonable salary.

Q. What have you to say of $1,500 to be paid to the secretary and treasurer of the company?

A. I would also consider that a very modest salary.

Q. And $800 for the bookkeeper? I mean these annual salaries, $2,500 for the president, $1,500 for the secretary and treasurer, and $800 for the bookkeeper.

302 A. Yes, sir.

Q. What have you to say as to $800 for the bookkeeper?

A. I consider that very low.

Q. And these are the only salaried officers?

A. As far as I know; yes, sir.

Q. Well, you are pretty well acquainted with the salaries of the officers of the company? You are an officer and a director?

A. Yes, sir.

Q. If there were any other salaried officers you would be likely to know it, wouldn't you?

A. I think so.

Q. It is your information that the capital stock you have referred to has all been paid up?

A. Yes, sir.

Judge Sanders: I believe that is all I want to ask Mr. McCarthy.

Recross-examination.

Judge Ritz:

Q. Mr. McCarthy, you said you thought $2,500 was a reasonable salary for the president of the company. What services does he rendered the company?

A. Well, it would be a pretty hard matter to operate a company properly, a company like this that has had the financial difficulties to undergo, and the many perplexing problems that we have had to shoulder, to go on without a president. I think he has got a great many duties to perform.

Q. He lives in Philadelphia, doesn't he?

A. He lives in Philadelphia; yes, sir.

303 Q. And is engaged in other business, isn't he?

A. Not to my knowledge.

Q. He is engaged largely in the real estate business in Bluefield, isn't he?

A. Well, Mr. Wirgman holds property here in trust for the stock-

holders of the Bluefield Water Works and Improvement company, but to my knowledge doesn't share in the profits of this real estate.

Q. You say the Bluefield Water Works and Improvement company own property here to which Mr. Wirgman owns the title as trustee?

A. Yes, sir, I suppose that is true. I am not particularly acquainted with the inside workings of that part of it, but I presume that is true.

Q. And you haven't taken into consideration in computing a return on the capital — that property at all, have you?

A. No, sir; no, sir. It is not connected in any way with the property of the Bluefield Water Works and Improvement company, so far as my part of the Bluefield Water Works and Improvement company is concerned. It only—As I understand, any proceeds from the sale of real estate here goes to the stockholders of the Bluefield Water Works and Improvement company direct, perhaps.

Q. At one time in its history the company did own all the real estate, or practically all the real estate, here in the city, didn't it?

A. They owned that part that the city is built on from Bowman street on the east to Mercer street on the west, and again on
304 the south side—that is, from the top of the Gravely ridge, this hill right here in Bluefield, to the top of the hill on the other side, or north side of the railroad. They also owned what was known as the Davidson tract, a piece of land lying between Chestnut street and Lynn street on the south side of Bluefield avenue to the top of the Gravely ridge.

Q. And they operated the real estate business and the water company altogether for quite a while, didn't they?

A. They did; yes.

Q. And then at a certain time they pulled the real estate out and left the water company running on and put the real estate in the name of an individual to be held as trustee for the benefit of the stockholders?

A. In order to divorce entirely the two accounts, as I understand, this change that you speak of was made.

Q. How much of the liabilities of the company did they pull out with the real estate?

A. Well, I don't know about that. I have no idea; I don't know whether they had any liabilities when this change was made.

Q. They had a capital stock liability, didn't they?

A. Yes, yes. It may have been; I don't know about that. I don't know whether they took out any or not; I am not sure about that. I don't think they did.

Q. They just left the water company to bear all of the capital stock liability for the real estate and everything, and took
305 the real estate out in the nature of a dividend to the stockholders?

A. Well, I don't know about that. I am sure.

Q. Now, Mr. Wirgman comes to Bluefield only occasionally, doesn't he?

A. He comes here about once a year, maybe twice a year sometimes.

Q. And that is all the connection he has with the active operation of the plant on the ground?

A. Well, it is the only direct personal contact with the operation right on the ground, but he is in personal touch and direction with the work on the ground from his Philadelphia office almost daily.

Q. Well, you direct the work too on the ground, don't you?

A. Yes, I do, but I get my directions from him.

Q. He directs you and you direct the work?

A. Yes.

Q. You are a practical engineer, and know about that sort of work, don't you?

A. Yes——

Q. And he is not?

A. (Continuing:) I conclude so.

Q. And he is not, is he?

A. Well, Mr. Wirgman is pretty well acquainted with the operation and maintenance of water works, well qualified to direct it.

Q. But it is two of you doing the same thing, one of you directing the other one, and then the other one directing the work?

A. No, I don't think that way, Judge.

306 Q. Now, the bookkeeper you spoke of, he lives in Philadelphia too, doesn't he?

A. Yes, he lives in Philadelphia.

Q. And all the books he keeps is books that he makes up from transcripts of book- that you have here?

A. No, we don't make any books. We don't keep any books here. Our reports go in either daily or weekly or monthly, as the case may be—yearly—to Mr. Wirgman; and, in fact, every transaction the company makes is transferred and sent to Philadelphia, and the accounts are kept there strictly. We don't keep any accounts here at all.

Q. You have accounts with all your customers here, don't you?

A. No, we do not.

Q. The bills are made to your customers from here?

A. No. You mean our water registers?

Q. Yes. That is the only customers you have, isn't it?

A. Well, I had in mind the people we bought material from, but I understand you mean parties we sell the water to. We don't keep any books in regard to that, except the usual customer register and cash book entries that are usually kept by all water companies. We don't keep any ledger or journal of anything of that sort.

Q. Well, it is not necessary, in order to run a water company, to have a journal or ledger?

A. It don't seem to be with us.

307 Q. In fact, the only books you have with your customers are kept here?

A. Yes, sir; that is, as far as the water is concerned.

Q. And the books that are kept in Pennsylvania are made up from reports that you make weekly and monthly and annually?

A. Yes, and daily.

Q. Yes, some are made daily and some monthly and some annually?

A. Yes, and some weekly.

Q. Why couldn't those books be kept here?

A. I suppose they could. They are kept in Philadelphia just as an expedient.

Q. The secretary and treasurer gets $1,500. What does he do?

A. He looks after the business of a secretary and treasurer in Philadelphia.

Q. He doesn't come down here at all, does he?

A. Oh, yes, he comes here often.

Q. When one of these gentlemen comes down here the company pays his expenses?

A. I don't know anything about that. I know our traveling expense account is very light, some years nothing.

Q. Does the secretary and treasurer do anything?

A. Oh, yes, I hear from him every day.

Q. Does he direct you how to run the plant?

A. Oh, yes, sir; he writes me every day. A great part of the correspondence is from him.

Q. He doesn't even have charge of the funds, does he? Don't you disburse the funds on checks signed by yourself?

308 A. No, sir; he does that. I just handle the payrolls.

Q. What other expenses do you have?

A. Well, some months we have $2,500 of material.

Q. You say yourself, Mr. Wirgman, and Mr. Triol are directors of the company, but none of you are stockholders except that you own one share of the stock?

A. Yes, sir.

Q. Who are the real beneficial owners of the stock?

A. I don't know that I can tell you. There are two stockholders in the company, but I don't know just now what their names are.

Q. How many directors are there in the company?

A. I believe there is five.

Q. And who is the other one besides the four you have named?

A. I believe Mr. Campbell. W. B. Campbell must be the one. I believe I named four.

Q. What salary does he get?

A. I don't know, I am sure.

Q. Do the stockholders of this company live in this country or abroad?

A. They are in this country.

Q. But you don't know who they are?

A. No. I suppose they are in this country. I suppose this—they are United States people.

Judge Ritz: Well, I believe that is all.

Redirect examination.

Judge Sanders:

Q. Well, whether the bookkeeper is in Philadelphia or
309 Bluefield, it is necessary to have one, isn't it?

A. Yes, sir; and it would cost much more to furnish a bookkeeper than the salary that is paid to Mr. Triol. In other words, we couldn't employ a bookkeeper for that money here.

Q. In addition to the services of your secretary, Mr. Rhodes, it is necessary to have a bookkeeper, I understand?

A. Yes, sir.

Q. And if you employed him here it would cost you more than you are paying Mr. Triol, $800 annually?

A. It certainly would, yes.

Q. I believe you stated yesterday, but I am not certain, when it was that you separated the business of the company—that is, your real estate business from the water plant.

A. I can't say just when that was separated, but I suppose it was about December 31, 1908.

Q. 1908?

A. Yes. I am only presuming that now; I just presume it on account of this statement being made up here.

Q. It was about that time, wasn't it?

A. It, I presume, dated from that time.

Q. Was any of the real estate of the company that was conveyed or held by Mr. Wirgman as trustee taken into consideration in the valuing of the company's property in connection with this water plant?

A. In this inventory?

310 Q. Yes.

A. Not in this inventory at all.

Q. Only the property used in connection with the water plant was taken into account in the inventory filed with Mr. Alvord's evidence?

A. Yes, sir, that is all that is in the inventory.

Commissioner Northcott:

Q. Mr. McCarthy, have you filed with this record any statement of the annual operating expense of the company?

A. I don't believe we have.

Judge Sanders: I am going to introduce the books and show that.

Commissioner Northcott:

Q. Do you know what the investment account of this company shows, the money actually put into the water business by the stockholders of the company?

A. It seems to me it is about three hundred—That is, the book accounts, you mean, as it stands on our books?

Q. The investment account.

A. The investment, I think, as it stands, less depreciation charged off, it occurs to me is about $330,000. That is only a guess, you know.

Q. And what is the capital stock outstanding?

A. $312,000.

Q. Is any part of that capital stock or the proceeds from it used in the real estate business, or do you know?

A. I can't say. I don't think there was, but I ain't posi-

311 tive about that.

Q. Well now, if there is only $312,000 capital stock outstanding, and the investment account shows upwards of $330,000, where does the difference come from?

A. Well, I don't know where the money was obtained; it may have been borrowed; it may have been, I suppose, taken out of the earnings of the company, you understand, and put into the plant. I presume that is where it came from.

Q. Have you any means of knowing, or can you state just what amount of money has been put into this water business by the owners, aside from earnings?

A. No, sir; no, sir, I don't know.

Q. Who can give that?

A. Mr. Wirgman perhaps can, or Mr. Triol.

Q. Mr. McCarthy, doesn't the company make an annual return for taxation purposes to the Board of Public Works?

A. Yes, sir; yes, sir.

Q. I understood you to say that you didn't know that any return had been made?

A. No, I didn't mean that; I didn't mean to convey that idea. I meant to say that we had nothing to do with the placing of the value on this plant, you understand. We make a return—a return is made every year, but what amount that is, now, I couldn't say; I don't know what it is returned at; I am not able to say.

312 Q. Have you never seen any return made by the company?

A. Yes, I have seen several of them, but I don't recall what the amounts were.

Q. Are you consulted or advised with in making up the returns?

A. Well, I make up a good deal of the data that goes on the returns in the way of pipe lines, extensions, and things of that kind; and the financial part is put on in the Philadelphia office.

Q. When were you last before the Board of Public Works?

A. In May last.

Q. At that time you told them that in your opinion, for taxation purposes, the value of this plant should not be raised about $190,000?

A. I didn't tell them that it shouldn't, but I pleaded with them not to raise it.

Q. You gave them as your opinion that that was a sufficient value for taxation purposes?

A. Yes, sir, figuring on the returns, you understand.

Q. Do you think there should be two values, Mr. McCarthy, one for taxation and one for rate making purposes?

A. Well, that comes back in the channel again. (Laughs.) I figure this way, if we were getting a proper return on our money, I would say it should not be.

Q. Do you think now there should be two values, one to be taken into consideration by the Board of Public Works in fixing
313 the value for taxation, and one to be taken into consider- by us in fixing the return on that value?

A. Yes, sir, I do believe in two values. We have it every day. Take two houses here in town, both exactly alike, one in a good neighborhood, where the rent is high; another in a poor neighborhood, where the rent is cheap. You have got the same capital, but the return is not the same. The assessors take that into account.

Q. You would take that into account if you went to buy the houses, wouldn't you?

A. Yes.

Q. That wouldn't be two values, then, would it?

A. I mean the building value. It cost just the same to build the houses; both are just exactly alike.

Q. What dividends does this company pay?

A. I have heard, but they are very small; I couldn't enumerate them.

Q. You don't know what it amounts to on the actual investment made?

A. No, sir, I don't know, but there has been a little—a small item a number of years ago.

Q. If you don't know the amount of the actual investment in this property, how can you state that the dividend is a small return?

A. Well, I have it on good authority that the investment as it stands on the books even is about $330,000; and I am satisfied that the plant cost a good deal more than that, because there has been a number of thousand dollars of depreciation, I know, off, even on $330,000.

314 Q. But you have just testified, haven't you, Mr. McCarthy, that you don't know where this $330,000 came from?

A. Well, I know this, the $312,000 has been paid in cash—at least, I am well informed; supposed to be truly informed about that; and I would say that the balance of the money has been taken out of earnings of the company; but I would say also that, in reply to your question, that even on $312,000, the amount of the capital stock, that the amount of dividends already paid by the company on that alone would be very small.

Q. But I understood you to say, in response to a question of mine, that you didn't know how much of this $312,000 went in the water business and how much in the real estate business?

A. Well, I believe it all went in the water business, as I understand it. You understand, it was outlined to me at the time; I can't recall just what it was, but I think the land account, you understand, was entirely divorced—taken out—the money value of the land taken out of the water plant.

Q. And taken out of the capital stock?

A. Well, I don't know anything about that, now; I couldn't say about that.

Q. Then you don't know how much of this capital stock was devoted to the water company and how much to the land company?

A. Well, I don't know. I just suppose that all of the $312,000 was devoted to the water company.

315 Q. But you don't know?

A. No, I don't know about that.

Q. Then you don't know whether the return has been great or small?

A. I know on the water plant they have been small.

Q. On the investment in the water plant?

A. Yes, sir.

Q. You know that has been small?

A. Yes, sir.

Q. Will you kindly explain how you know that, if you don't know what the investment is?

A. Well, I believe I explained that.

Q. That may be, Mr. McCarthy, but I didn't understand the explanation?

A. There is $312,000 in the water plant.

Q. Do you know that?

A. I understand that. Unless I am very much wrong, that is true. That is what I have always understood, you understand, just like I know what Judge Sanders' name is here, or who is president of the United States. It is a matter of common knowledge among the members of the water works family here, and it is barely possible, you understand, that I may be misinformed on that point, but I think that is not so.

Q. What do you think that plant is worth now, true and actual value, Mr. McCarthy?

A. Well, I, of course, wouldn't know very much about it, except from Mr. Alvord's reports. We have Mr. Alvord's reports there, and we hired him to make the valuation.

Q. And you have testified that in your opinion it was

316 an accurate and correct one?

A. Yes, sir.

Q. And what does it make the value of this plant?

A. About $540,000, I believe, in round numbers.

Q. Even considering that the investment is $330,000 in this water plant and the value is $540,000, that is a pretty fair return, isn't it, aside from any dividends on the business?

A. Well, I don't know. A person would have to know the amount of depreciation that has been written off.

Q. Well, isn't this $540,000 valuation set by Mr. Alvord after depreciation is written off?

A. Well, you don't understand me. I mean from our side, from the book account side.

Q. What has that to do with it?

A. Well, you are predicating this proposition on the book account value on the one side, as against the inventory of Mr. Alvord on the

other. Now, if you take into account the inventory figures and depreciation, you understand, on the one side, you should take into account the book account and depreciation on the other side.

Q. Well, the very best you can figure from your knowledge is that there has not been more than $330,000 in cash put into this company by the owners? Isn't that true?

A. That is as far as I know; yes, sir.

Q. Now, take that to be true, and if the value of the plant now is $540,000, isn't that a pretty fair return upon
317 an investment of $312,000 put in, aside from any dividends?

A. Well, I don't know whether that would be true or not, taking into account the depreciation written off the books.

Q. Well, if $312,000 is the amount put in, and it is worth now $540,000, that shows a profit of $228,000, doesn't it, aside from any dividends?

A. Well, I don't know. This plant has been in operation somewhere in the neighborhood of twenty-five or six years.

Q. Now, what is the depreciation written off of the book account got to do with the question I am asking you? If $312,000 is the investment, and it is now worth $540,000, if that is not a pretty fair return, aside from any dividends that may have been paid?

A. Well, if it was during a short period of time I would say it would be, but taking into account the amount of money that was put into this plant years ago, and the amount that has been added to it since, and figuring the interest, I don't know whether it would be or not.

Q. Do you think $312,000 was put into this plant twenty-five years ago?

A. Not at that time.

Q. What percentage of it?

A. I couldn't say.

Q. What percentage of it since you took charge of it?

A. Well, perhaps $100,000.

Q. Then, if $312,000 is invested, that would be $212,000 invested up to the time you came here, in round numbers?

A. Well, yes, sir.

318 Q. Have you any knowledge what the original investment was that started this plant?

A. No, sir.

Judge Sanders:

Q. Mr. McCarthy, you have been asked whether you believed that there should be two values, one for tax purposes and another for rate making purposes. I don't know that I understand what you said about that. I believe you said there should not be.

A. Well, ordinarily there should not be. I said in this case here——

Q. Do you mean to say in this case that there should be two values fixed, assuming that the taxation value has been fixed for this year $190,000, and the commission would fix a larger value for rate

making purposes, wouldn't it next year necessarily follow that the value should be fixed for taxation at the value fixed by the commission?

A. Well, I don't know.

Q. Well, necessarily it would be only a temporary difference in the values, wouldn't it, if the Board of Public Works has valued it at $190,000 for tax purposes, and the commission values it at $540,000 for rate making purposes, that could only be a temporary difference in the values?

A. Yes, it couldn't alter the actual values in the plant. Of course, we have nothing to do with the assessment. The Board of Public Works fixes that themselves; and what they would put it at would have no bearing on the actual value of the plant.

Q. But I mean to say, if the commission would fix a value
319 on this property and fix the rates accordingly, sufficient to bring a fair return on the property, why, then, couldn't the Board of Public Works, as a matter of fact, fix the value on it for tax making purposes to conform to the value fixed by the commission?

A. Well, I think so.

Q. And there need not necessarily be two values, if the commission fixed the value at such a sum as will render a fair return to the company?

A. I think not.

Judge Sanders: That is all.

(Witness stands aside.)

WILLIAM MCCARTHY, recalled, testified as follows:

Direct examination.

Judge Sanders:

Q. You have been asked, Mr. McCarthy, as to what money was actually invested in this water company. I will ask you to state, if you know, as a matter of fact, or from your information and associations with the officers of the company and your business relations with the company, as to whether or not this company sold considerable of its real estate and invested that in the development of its water plant.

A. They have sold a great deal of real estate, and I understand that large sums were used in the development of the water plant.

Q. At the time that this company bought this real estate
320 here, was the land high or low?

A. Why, the land was very low.

Q. When was that land bought by the company? Do you remember?

A. I think it dates back to about 1890—1889 or '90 somewhere.

Q. Do you know what earnings of the company have been put into the plant of the company?

A. No, sir, I do not.

Q. Do you know what the appreciation of the property of the company has been?
A. No, sir.
Q. Nor the depreciation?
A. No, sir.
Q. Do you know what the deficits have been in the past?
A. No, sir, I do not.
Q. Then, Mr. McCarthy, do you know, or have you any means of knowing, how much money has been actually invested in the water company plant and property?
A. No, I couldn't say; I don't know.
Q. But you have only undertaken, as I understand it, to give the value of the water company's plant as inventoried by Mr. Luce, and has valued by Mr. Alvord?
A. Yes, sir.
Q. As of the first day of January, 1915, and up to this time?
A. Yes, sir. Well, I don't believe that would be right; I don't believe there has been any values added to this inventory, that I recall, since the date of the inventory.

321 Q. Well, that conforms to my question. I believe I asked you yesterday if the valuation now was practically the same as it was when the invoice was made in 1915.

A. Well, I would say practically so, with the exceptions of what little may have been added to the plant since that time.
Q. You have made that explanation, I believe, heretofore in your evidence?
A. Yes, sir.

Judge Sanders: That is all.
Judge Ritz: That is all.

(Witness stands aside.)

A. L. RHOADS, a witness introduced on behalf of the applicant, having been first duly sworn by the commissioner, testified as follows:

Direct examination.

Judge Sanders:

Q. Mr. Rhoads, what connection have you with the Bluefield Water Works and Improvement company, the applicant, if any?
A. Well, I am the cashier there and perform general office duties.
Q. What are your duties as cashier?
A. Well, the supervision of collections and getting out the bills—contracts.
Q. Do your duties require you to keep in touch with all the collections of the water company?
A. Yes, sir.

322 Q. I wish you would state what their losses have been per annum during the last six years on account of failure to collect water rents.

A. I don't think they have been over $10 per year.

Judge Sanders: That is all.

Judge Ritz: That is all, Mr. Rhoads. I may want to ask him about another matter later on.

(Witness stands aside.)

WILLIAM H. TRIOL, a witness introduced on behalf of the applicant, having been first duly sworn by the commissioner, testified as follows:

Direct examination.

Judge Sanders:

Q. You live in Philadelphia, I believe, Mr. Triol?

A. I do.

Q. Are you connected with the applicant, Bluefield Water Works and Improvement Company?

A. I am, as accountant.

Q. How long have you held this position with the company?

A. I have been connected with the Bluefield company since Mr. Bryan's death in 1901.

Q. You are a director of the company too, I believe?

A. Yes, and qualified stockholder.

Q. What are your duties as bookkeeper?

A. To take care of all the accounting.

Q. I wish you would please state what have been the gross receipts of the applicant water company for the years 1909 to 1916,
323 inclusive, arising from its water plant alone.

A. You want that in detail?

Q. Excluding entirely any real estate business that may have been done. Yes, sir.

A. $26,167.07 for 1909; $31,951.86 for 1910; $35,890.24 for 1911; $33,983.50 for 1912; $36,166.72 for 1913; $39,908.98 for 1914; $43,483.31 for 1915; seven years, a total of $247,551.68 for the seven years.

Q. Now, I wish you would please tell me what has been the operating cost per annum for the years of 1909 to 1915, inclusive, of the plant of the applicant, Bluefield Water Works company, in furnishing water to the city of Bluefield.

A. Well, in what way shall I give you that? In detail?

Q. Yes, give it to us in detail. Make it as full and plain as you can.

A. The maintenance and repair account for 1909, by the way of material used, $560.52; 1910, $2,574.54; 1911, $800.38; 1912, $929.44; 1913, $1,051.89; 1914, $1,885.56; 1915, $2,052.43. The maintenance and repair account, $1,486.69; 1910, $3,857.55; 1911, $3,228.94; 1912, $5,529.92; 1913; $2,717.87; 1914, $4,007.92; 1915, $3,304.63.

For coal, freight, and hauling, 1909, $266.75; 1910, $967.53;

1911, $2,498.61; 1912, $1,043.52; 1913, $1,076.49; 1914, $2,393.07; 1915, $2,314.78.

For the engineer and fireman, 1909, $911.29; 1910, $1,722.59; 1911, $2,213.62; 1912, $1,602.04; 1913, $1,907.53; 1914,
324 $2,404.41; 1915, $2,257.45.

Inspection, 1909, $720; 1910, $825; 1911, $900; 1912, the same; '13, the same; '14, the same, and '15, the same, $900 each.

Salaries paid at Bluefield from 1909, $3,922.06; '10, $3,890.83; '11, $3,720; '12, $3,900; '13, $3,900; '14, $4,800; '15, $4,800.

You- question was the absolute operating expenses. Might I ask right here, am I entitled to charge in insurance and compensation fund?

Q. Well, you can put that in.

A. That is on payroll items, 1909, $75.93; 1910, $156.43; 1911, $76.66; 1912, $112.85; '13, $217.14; '14, $308.22; 1915, $311.04.

Stable expenses in 1909, $140.40; '10, $126.94; '11, $154.89; '12, $129.78; '13, $118.83; '14, $86.03; '15 has no stable expense.

*Pul*mbers, bonds, and laboratory expense are combined accounts; I can't separate them. In 1910—I haven't any 1909—$72.34; '11, $40; '1*3*, $40; '13, $40; '14, $40; '15, $44.73.

Now, I have also accounts which are general in their nature, but which go into the general profit and loss account. Those that I have just given you are the absolute operating expenses, as I have conceived them. We have taxes in 1909, $2,369.03; 1910,
325 $1,994.15; 1911, $8,533; 1912, $2,069.18; 1913, $2,202.53; 1914, $2,448.57; 1915, $3,439.78.

Traveling expense in 1909, $179.39; 1910, $195.77; 1911, $58.50; 1912, nothing; 1913, $172.05; '14, $22.30; '15, nothing.

Legal expense, 1909, $1,494.04; '10, $1,633.81; '11, $1,823.76; '12, $606.90; '13 $210; '14, $200; '15, $250. I want to say in this connection, Mr. Commissioner, we have still on the books an open account unsettled, and every charge item that has not been apportioned as yet, therefore, does not appear. The expenses last year at Charleston and expenses this year, we are keeping that as an open account.

Q. That is in the cas*t* of the City of Bluefield against Bluefield Water Works and Improvement company, pending before the Public Service Commission,, and consolidated with this case?

A. Yes, sir, but yet kept as an open account in the books.

Judge Ritz:

Q. It hasn't been paid yet, has it?

A. Well, in so far as it has been charged up it has been paid; some of it hasn't yet been charged up.

Salary account in Philadelphia, 1909, $1,200; 1910, $1,350; 1911, $1,350; 1912, $1,350; 1913, $3,508.31; 1914, $4,800; 1915, $4,800.

Office expense, 1909, $1,166.73——

Commissioner Northcott:

Q. Just state where this is.

326 A. Well, it is office expense.

Q. Philadelphia and Bluefield, either or both?

A. Well, this is a combined account, I will say from my memory, is a combined account of all office expense, Bluefield and Philadelphia. 1910, $1,076.39; 1911, $943.45; '12, $993.91; 1913, $1,256.76; '14, $1,049.79; '15, $1,322.14.

Interest account. 1909, $984.76; '10, $795.06; 1911, $1,015.78; '12, $1,047.78; '13, $3,036.05; '14, blank; '15, blank.

Adjustments, exonerations, and losses, principally adjustments and exonerations. 1909, $1,685.91; 1910, $513.38; 1911, $248.25; 1912, $271.98; '13, $132.31; '14, $307.51; '15, $613.35. Depreciation account. This includes plant and inventories. 1909, $6,859.99; 1910, $6,281.03; 1911, $6,243; 1912, $4,432.39; 1913, $8,141.42; 1914, $4,557.87; '15, $4,655.10. I think that includes all of the expense accounts.

Judge Sanders:

Q. Now, I will get you to state what the net returns or profits of the applicant water company were derived from the operation of its water plant and the collection of water rates for the year 1909.

A. For 1909 I will figure the surplus of revenue, $2,865.80.

Q. How is that?

A. $2,865.80.

Q. That is the net profits, is it?

A. That is the surplus, net.

327 Q. All right. Go ahead.

A. That is the net of the profit and loss account for that year. That is the better way of putting it.

Q. You mean net income?

A. Yes.

Q. Well, what was it for 1910?

A. $3,773.52.

Q. 1911?

A. $9,410.07.

Q. 1912?

A. $8,859.31.

Q. 1913?

A. $5,026.70; 1914, $9,210.64; '15, $12,840.03.

Q. Have you figured out what the net income to the company would be on its capital invested—what percentage?

A. Well, there is always a calculation to be made from that that figures the amount per cent. I have figured here a total of those figures, which I have given you, $51,986.07, a total for seven years.

Q. For the seven years that you have referred to, 1909 to 1915, inclusive?

A. 1909 to '15.

Q. And that is the net profits, or net income to the company for this seven years?

A. That is what I make it, sir.

Q. And, of course, the per cent of earnings on the investment would depend on what you figured the investment at?

A. What you figure the investment, up to a certain point, the capital at one amount, and beyond that at another amount.

Judge Sanders: That is all, I believe.

328 Cross-examination.

Judge Ritz:

Q. Mr. Triol, how long do you say you have been the accountant of this company?

A. From about 1901.

Q. What was its capital stock paid in at that time?

A. $252,000.

Q. And at that time it was a large real estate owner, too, wasn't it?

A. There was a land account at that time.

Q. Since that time you have sold $60,000 of stock? Is that it?

A. We didn't sell it. We paid $60,000 for money that had been advanced—loaned—and the only way of paying it was to pay it with stock.

Q. You wished the stock on the people, then, for money that you borrowed from them, if you prefer to have it that way?

A. Yes, sir. That would increase the capital to $312,000; it was $252,000 and increased by $60,000.

Q. How long had it been $252,000 prior to that time?

A. The $60,000 capital was issued in 1913, I think in December, 1913. I would have to refer for that date, but I think it was December, 1913.

Q. How long had the company had that money, $60,000, borrowed?

A. I couldn't say.

Q. Was it borrowed in 1901?

A. Oh, no, I don't think it was.

Q. You borrowed that $60,000 some time betwen 1901 329 and 1913?

A. Yes, sir.

Q. Do you know what it was borrowed for?

A. For whatever necessary purpose the cash was required, but just exactly what, at the moment, I couldn't say. As far as my memory goes, the whole $60,000 was advanced subsequent to—(Refers to paper.) I think subsequent to 1912. That is the time the large interest account figures up.

Q. The company, then, had that a very short time?

A. Yes, a very short time, comparatively speaking.

Q. Prior to 1912 the capital stock of the company then was $252,000?

A. Yes, as I remember.

Q. And the company owed no money prior to the borrowing of this $60,000?
A. Not that I know of.
Q. The books will show that it didn't?
A. The books show it, of course. I am answering now from my memory.
Q. Aren't the books here?
A. Yes.
Q. I wish you would get them and testify from what they show instead of your memory.

(Witness gets books.)

Q. Now, you have the books of the company from its organization down to the present time, have you?
A. I have them all.
Q. When was the company organized, Mr Triol?
A. If my memory serves me correctly, 1890.
330 Q. Well, now, get the book and see what that shows.

(Witness refers to books.)

A. What was the question?
Q. When was the company organized?
A. I have an entry here as of December 31, 1890.
Q. Well, does that indicate that that was when it was organized?
A. That may be only the summing up entry.

Commissioner Northcott:

Q. Haven't you got the minute book here?
A. No, I haven't.
Q. That is in Philadelphia?
A. That is in Philadelphia. It can be procured immediately.
Q. I just wondered if you had it here, was all.
A. No, we haven't it here.

Judge Ritz:

Q. Well, that approximates the date of its organization?
A. Now, one minute, Judge. My first journal entry shown in this book is on April 3, 1890.
Q. On April 3, 1890, then, the company began business, or was organized?
A. Practically that is it. That is the date. I will see if there is anything further. That is practically the organization date, so far as actual transactions.
Q. What was the authorized capital stock of the company at that time?
A. December 31, 1890, $252,000.
Q. That was the authorized capital?
A. I won't say authorized. That was the capital.
331 Q. That was the capital paid in?
A. That was the capital paid in.

Q. Or charged upon the books?
A. Yes.
Q. How much money was paid for that $252,000 of stock?
A. $252,000 represents fully paid stock.
Q. I understand that represents fully paid stock, but was there $252,000 paid for it?
A. $252,000 paid for it.
Q. It was sold at par?
A. At par.
Q. And that money was all paid in before December 31, 1890?
A. That is the date of the entry, the last date, December 31.
Q. It was all paid in, then, prior to that time?
A. Yes, paid in prior to that time.
Q. Now, what did you do with it, the $252,000?
A. Well now, you mean as to what was purchased with the $252,000?
Q. Yes, that is what I want to know.
A. Water works at Bluefield, $17,882.10, bought from the Virginia company. $42,287.90, cash received from treasurer Virginia Land company to complete the subscription to stock.
Q. I want to know now what you did with the money, not who you got it from.

Judge Sanders:

Q. How was the $252,000 paid out arising from the sale of the stock?
332 A. I would have to audit the accounts right here to find that out; that is something I am not conversant with.

Judge Ritz:

Q. Haven't you got a trial balance or an account in your books that shows what the condition of your business was at the end of 1891?
A. There are most undoubtedly trial balances in existence, but I don't have them in my possession.
Q. And none of these books that you possess throw any light on what became of that $252,000?
A. The ledger naturally would show that.
Q. What light does it give?
A. I would have to look through the books and make a trial balance.
Q. You found an item of $17,000 paid for water works?
A. Yes, sir.
Q. Was that all that was paid out for water works?
A. That is all in this entry.
Q. How much of it was paid out for land during that year?
A. $82,330.
Q. Was there any of it paid out for any other purpose during the year 1891, that you can find?
A. There was 15 houses, $28,500.

Q. Those were houses that were constructed on land here in the city of Bluefield for sale, weren't they?

A. They were constructed by the Virginia company, and bought from them.

Q. They were not in connection with the water business
333 at all?

A. No.

Q. That is $17,000 and $28,000 and $82,000, $127,000. Is there not anything to indicate what became of the other $125,000?

A. $54,119, made up of $52,000 of land, $6,000 for houses—for houses built.

Q. That was more real estate that was bought here in the city of Bluefield?

A. That was more.

Q. It had no connection with the water company?

A. No, that is not a water works charge.

Q. And the $6,000 was for houses constructed on that real estate for sale?

A. That was for houses bought from the Virginia Investment Association that had been constructed by them.

Q. Had no connection with the water company?

A. It had connection with the company as a whole.

Q. Had nothing to do with the furnishing of water, is what I mean.

(No answer.)

Q. That $58,000 would still leave $67,000 of it. What became of that?

A. I can only tell you how the money was derived from the entries that were made.

Q. Let me ask you this, Mr. Triol. Did your books show that there was any money in the treasury on the first day of January, 1891?

A. I can answer that by referring to the cash book. That was what date?

Q. The first day of January, 1891.

A. First day of January, '91, $62,732.41.

334 Q. You had that much money on hand?

A. At that date that is the balance of cash as shown by the cash book.

Q. Yes. You have given us the items of expenditure during the time before that. Now, can you tell from your books what that money was spent for?

A. The books, of course, will show what the money was spent for.

Q. Well now, see if you can find out what became of that $62,000?

A. I will have to go through a whole year, Judge, to show all the separate items.

Q. All right. I want to find out what became of this money.

A. $3,279.91, office expense, land at Bluefield, made up a certain amount of money, probably eighteen or twenty different items. $15,000 was received in 1890, October 1st, from J. H. Dingey, treas-

urer of the Virginia Land company, on account of subscription to stock.

Q. I want to know what that money was spent for.

A. The only answer I could give to that is to prepare yearly trial balance sheets showing what was done from year to year. I haven't the trial balance sheets with me, and I couldn't tell from memory. The only way that question could be got at would be by trial balance sheets from year to year.

Q. You have accounted for all of it but $68,000.

A. I accounted to you for 171. I accounted to you for $54,000; I have just given you 15; I have two other items here, $3,998.08 and $8,000.

335 Q. That is the money received. I am trying to find out where it went to.

A. I couldn't do that without having trial balances for every year.

Q. You said you paid $17,000 for the water works. That is correct, isn't it?

A. Yes.

Q. You said you paid $54,000 for land at a certain time. That is correct, isn't it?

A. Yes.

Q. There were two items for houses and two items for land.

A. The other item—the remaining item which made up that $171,000 which I gave you first, which I endeavored to complete, but you asked another question, was a subscription amounting to $42,287.90, and that came from the Virginia Land company treasurer, as a subscription to stock. That was the balance of the 171.

Q. We are working at cross purposes, Mr. Triol. You are giving me the subscriptions to the stock, when I am trying to get what you did with the stock. In order to get at the whole thing, who were the subscribers to the stock of this company, and how much did they subscribe?

A. The Virginia land and Virginia Investment Association were the entire holders of the stock.

Q. How much did each subscribe for?

A. I can't tell you how much they subscribed for; I can tell you how much the ownership is now.

Q. Don't your books show how much they subscribed for in the beginning?

336 A. This item shows that the Virginia Land company—practically the two syndicate companies, the Virginia Land and Virginia Investment Association, were the subscribers for the entire stock. They are separate and distinct companies.

Q. Same stockholders?

A. Well, I won't even say that. There was a large number of stockholders in one company that don't appear at all in the other, so far as I know.

Q. These two companies subscribed to all the capital stock of the Bluefield Water Works and Improvement company. That was $252,000. How did these two companies pay that subscription?

A. Well, the very nature of the entry that I have just recited will show how the water works and the land and houses were acquired.

Q. At that time this Virginia Investment company owned a lot of land in Bluefield and houses in Bluefield?

A. No, I think they were bought entirely from the Virginia company.

Q. And also owned the water works plant in Bluefield?

A. That was owned by the Virginia company.

Q. And those houses and land and that water plant were turned in as a credit on the subscription to the capital stock? Isn't that true?

A. That is true, to the best of my knowledge.

Q. And the water plant was turned in at a fixed valuation of $17,000?

A. That was practically eighteen, Judge.

Q. $18,000 of stock of the Bluefield Water Works and Im-
337 provement company was issued in lieu of the water plant that was received?

A. Yes.

Q. The other $252,000 was paid for by transfer of the title to the land that was held by the Virginia company?

A. No, there was lots of cash. This $42,000, I stated——

Q. Well, I will ask you this way. How much of the balance of the subscription was paid for in land and houses?

A. None of the balance other than what I have recited. All the rest of it was paid in cash.

Q. Well now, you paid $18,000 of it for a water works?

A. Yes.

Q. That would leave $234,000. How was that $234,000 paid and when was it paid?

A. Well, I could only answer that by the dates and the information conveyed by these entries that I have just recited.

Q. All right.

A. The $171,000 which I gave you.

Q. Well, what about that $171,000?

A. It is the land, eighty-two; houses, twenty-eight; water works at eighteen, and forty-two thousand dollars cash from the Virginia Land company.

Q. Now then, $171,000 was paid by $18,000 for the water works and the balance for houses and lands. Is that correct?

A. That is it.

Q. $153,000 then for houses and lands. Well, that leaves $82,-
000. How was that paid? How was the $82,000 paid?

A. $54,000 of that was the Davidson tract.

338 Q. Davidson lands?

A. Davidson land, $48,001.92, and four houses, $6,000.

Q. Well, $54,000, all told, was the houses and land?

A. Yes.

Q. That left $28,000. How was that paid?

A. That was paid in cash.

Q. Now, there was only, then, of the subscription of $252,000, there was only $82,000 paid in cash?

A. That was cash.

Q. $28,000 of cash paid in?

A. Yes.

Q. Can you tell me what became of this $28,000 cash?

A. I can only answer that as I did before. I would have to take the balance sheet of the company.

Q. Of the original capital, there was only $28,000 paid in cash, and you can't say what became of that $28,000?

A. No, except in a general way.

Q. What did the water plant consist of that was acquired by the Bluefield Water Works and Improvement company at that time?

A. I don't know. From memory I don't know; I am not at all conversant with that time.

Q. There was no further capital put in this company until about 1912 they borrowed $60,000?

A. There was $60,000 borrowed about that time.

Q. And about 1913 or '14 they issued stock for that?

(No answer.)

Q. So that the only money that has been put in was $88,000?

339 Judge Sanders:

Q. You mean out of the capital stock?

Judge Ritz: Yes.

A. That was the amount of money represented in the cash, if that is what you mean.

Q. The present capital stock of $312,000 was made up of a water plant valued at $18,000, real estate valued at $207,000, $28,000 in cash at the time of organization, and $60,000 in cash subsequently put in, about 1913?

A. Yes, that in addition to anything else that may have been put in; that represents the capital.

Q. What other capital has been put in?

A. Well, there is no capital, if you take it as capital stock, but there is a largely increased amount that has not been capitalized, represented by material in the inventory.

Q. For how many years did the Bluefield Water Works and Improvement company carry on its business as a real estate company and a water company combined?

(No answer.)

Q. I wish you would, Mr. Triol, find out, between now and to-morrow morning, what became of that $28,000 of money that was put into this concern, and also what became of the $60,000 in money that was put in in 1913.

(No answer.)

NOTE.—At this point, it being 5 o'clock p. m., an adjournment was taken until the following day, Thursday, July 27, 1916,
340 9:30 o'clock a. m., at which time this hearing was resumed as follows:

(Witness stands aside.)

The applicant here rested its case for the time being).

Thereupon, the respondent, the City of Bluefield, to maintain the issue on its behalf, introduced the following evidence, to wit:

WALTER E. MILLER, introduced as a witness on behalf of the respondent, having been first duly sworn by the commissioner, testified as follows:

Direct examination.

Judge Ritz:

Q. Miller, where do you live?
A. Madison, Wisconsin.
Q. What is your profession?
A. Civil engineering.
Q. What particular branch of the engineering profession?
A. Well, during the last nine years it has been chiefly valuation of public utility property, principally water and gas utilities.

Q. What, if any, commission have you been engaged with
341 during that time?

A. I have been with the Railroad Commission of Wisconsin since January, 1907, in its engineering department.
Q. Does the Railroad Commission of Wisconsin have jurisdiction of fixing rates and valuations of all sorts of public utilities, as well as railroads?
A. It has.
Q. During that time, Mr. Miller, what actual work have you done in the way of valuing property such as the property of the Bluefield Water Works and Improvement company?
A. For the Commission alone?
Q. Or otherwise.
A. Well, I have made a large part of the valuations of the water plants that have been valued by the Commission's staff, participated in all of those, and in most of the valuations of gas plants; and I have served in other cases in other states, independently of the work of the Commission. I assisted in the valuation of property of the Pennsylvania Water company, supplying the suburbs east of Pittsburgh, a property of about $3,000,000 valuation. I assisted in the valuation of the People's Gas, Light and Coal company, in Chicago, with Mr. Haginaw, in 1910 and '11, in making his report to the council committee on gas, oil, and electric light; and there was one or two other cases, I don't just recall now, outside of the work of the Commission; but the valuation work that I personally have done in the last nine years would amount to quite a number of millions of dollars.

342 Q. Are you acquainted with the properties of the Bluefield Water Works and Improvement company?

A. I am.

Q. How did you happen to become acquainted with these properties?

A. I beg your pardon?

Q. How did you happen to become acquainted with these properties?

A. Through having been employed by the City of Bluefield to make a valuation of that property, and through my examination of the inventory prepared by Mr. Alvord, and through personal examination of substantially all visible parts of the property.

Q. An inventory has been introduced with the testimony of Mr. Alvord, which he says is a correct inventory of the properties of the Bluefield Water Works and Improvement company. Have you had access to that inventory heretofore?

A. Yes, sir.

Q. Have you checked that with the properties of the company on the ground from a personal examination of them?

A. Yes, sir.

Q. Did you make a valuation of the properties of the Bluefield Water Works and Improvement company?

A. I did.

Q. What information and data and inspection did you have or did you make for the purpose of this valuation?

343 A. Well, I had the inventory—copy of inventory made by Mr. Alvord, and I had—I was given access to all of the records of the company, of cost of the various items of comparatively recent construction that I was interested in seeing, so far as the company had the information desired. It is my understanding that the company wasn't able to show the separate costs of pipe extensions, those costs having been lumped in with other costs in such a way that they couldn't be segregated, and as to that and several other items it seemed impracticable to get the segregated costs of some of the items that I would like to have had, and was left to value those items on the basis of the application of my own judgment to the conditions as I saw them.

Q. Mr. Miller, did you find the inventory which has been introduced in evidence to be a correct inventory of the properties of the company?

A. Substantially correct as to the—Well, correct as to the main items, and substantially correct throughout. I found a number of differences in calculated quantities of work and materials, and those have been noted here, in the main. I think possibly there were a few others which didn't get into the list that I made.

Judge Sanders:

Q. Well, those are the ones that are noted in the stipulation?

A. Yes.

Q. You might say where they were noted.

Judge Ritz:

Q. I call your attention to a stipulation which has been
344 entered excepting from the agreement as to the correctness of this inventory certain items. I will ask you to state if these are the discrepancies that you discovered between the inventory and the actual property as you found it?

A. Well, these are substantially all of them, but I have subsequently found that I did omit a very few other discrepancies between my calculations of quantities of work and materials and those which had been calculated and entered in the inventory. For example, it appeared that the amount of excavation for foundations of the Ada pumping station had been figured from the present surface of the ground, which had been filled, according to the inventory, about four feet above the level of the ground around the old Ada pumping station, which was displaced by the present one.

Q. Now, taking up the items referred to in this stipulation, I wish you would indicate what differences there are between your estimate or your calculation of the quantities and the estimate or calculation contained in the inventory heretofore filed, and also state whether or not the quantities given by you are correct, and why you believe them to be correct in each case.

A. The first item is the number of cubic yards of concrete in the spring house of the Ada spring. The inventory, on page 49, states the quantity as 46 cubic yards. The inventory on page 127, exhibit No. 22, shows a plan and sectional elevation of that
345 spring house, which, so far as I can ascertain, is a correct plan and sectional elevation, and my calculation of the quantity of concrete in that structure shows 32 cubic yards based on this plan and sectional elevation.

Q. You made that calculation from the plan and sectional elevation, after checking that with the spring house from a personal examination, did you?

A. Yes, sir. Now, some of the dimensions are not given on these drawings except by scale; and my calculations were necessarily based in part upon the scaled dimensions of the various portions. The next item is number of square yards of shingles on spring house——

Q. Well, I believe Mr. McCarthy, upon investigation, stated that that was a mistake; that you were correct about that?

A. Yes, sir. The true quantity is greater than is given in the inventory, apparently.

I differ with the figure given in the inventory, on page 50, for the length of 18-inch tile pipe from the spring house, because of my reliance upon the plan and sectional elevation given in the inventory, which shows 6 feet less length than that stated in the inventory on page 50. The item is a comparatively small one, and not worthy of spending much time on.

On page 61, cubic yards of earth excavation in Ada pump-
346 ing station, building foundation. The quantity there given is 264 cubic yards. My calculation was based upon the plans which have been reproduced by a photographic process and shown

in the inventory, pages 135 to 138, inclusive. My calculation was based upon the plans and the statement contained in the inventory, that the grade of the old pumping station yard had been raised about 4 feet. I figure the excavation from the grade of the old pumping station yard, and naturally got a smaller quantity than if the calculation was based upon the present grade. I have 205 cubic yards of excavation.

Q. Then if you had figured that from the grade as I understand it was, 4 feet below the present grade, you would have gotten it still less?

A. I did figure it on the old grade, 4 feet below the present grade. The filling of that yard is entered in a separate item.

Q. Well, if you had figured from the present grade, you would have gotten less?

A. Gotten more.

Q. Gotten more?

A. More than I did, and probably the same as is given in the inventory.

Q. You think if you had figured from the present grade instead of from the grade as you were informed it was that you would have gotten the same as the item in the inventory?

A. I think so, substantially.

Again, on page 61 of the inventory, I differ with the statement there given as to the cubic yards of concrete in foundations
347 for building. There is 264 cubic yards entered in the inventory, page 61. My calculation, based upon the plants and the sectional drawing on page 136, results in 200 cubic yards as the quantity of concrete in foundation walls, in place of 264.

Page 62, the lumber in roof and ventilator. I believe Mr. McCarthy admitted that there was an error in the items of lumber as computed and entered in the inventory.

Q. I believe it was stated that that had been corrected in the valuation.

A. Yes.

Judge Ritz: Is that correct, Mr. Alvord?

Mr. John W. Alvord: I think so. I am not certain. Perhaps not, because I think these were called to my attention after the valuation was made.

A. And again, on page 62, I couldn't find as much poplar moulding around the roof as was entered by about half—half the quantity shown in the inventory. That is a small item, however.

The wainscoting of the engine room I find to be over-estimated in the inventory. It is described in the inventory as being 6 feet high, and I measured it 4 feet 11 inches, except under the windows, where it is 40 inches high.

Judge Ritz:

Q. Does that account for the difference in the quantities you have ascertained?

A. Yes.

348 Page 82, rock excavation for building site, the inventory quantity is 1,080 cubic yards, solid side hill rock. Now, one can't determine exactly how much rock was removed, but the slope—the original slope—ap-ears to have remained as it was both east and west of the pumping station; and measurements which I took to supplement the drawing given on page 135, and calculations from those sections, indicate to me that there was only about 500 cubic yards taken out above the base of the floor of the pumping station. I notice that the line of excavation of rock—the plane of excavation of the rock north of the pumping station almost coincides with the north face of the building; and I measured the depth of rock excavation at the east and west ends of the north side, and the horizontal distance from the north face to the approximate toe of the slope of the original rock surface, as a basis for my calculations.

Page 92, cast iron pipe. On that page there is a statement of the length of 4,500 feet on 10-inch pipe, weighing 56 pounds per foot, 2,930 feet 10-inch pipe weighing 69 pounds per foot, 4,130 feet 10-inch pipe weighing 70.8 pounds per foot; and there follows a statement that only the records of the Beaver Pond line are available for the records of the early pipe lines, and since 1908 the pipe purchased "has conformed to class B, American Water Association standard." Mr. McCarthy showed me a profile of the old Beaver Pond spring pipe line, on which it was noted that there were 350 pieces of

349 Class A pipe, weighing 60 pounds per foot, 540 pieces of class B, weighing 56 pounds per foot, 25 pieces of class C, weighing 52 pounds per foot. Those class designating letters seem to be different from their modern use. But I used those lengths and weights per foot of the pipe as stated on the profile for the tonnage of the pipe in that Beaver Pond spring line, instead of being governed by the weights and measure statements in relation to weight of pipe as given. It seemed to me they were more likely to be correct.

Q. Does that account for the difference between the estimate that you made and the inventory filed?

A. That accounts for substantially all of it, I believe.

Q. Mr. Miller, you said you made a valuation of this property. Did you make a report showing the result of your valuation of the property?

A. I did; yes, sir.

Q. I show you a report marked on the front cover thereof, "Report on the Valuation of Property of Bluefield Water Works and Improvement Company, Bluefield, West Virginia, W. E. Miller, Consulting Engineer, Madison, Wisconsin." I will ask you to state if that is the report you made upon the valuation of this property.

A. It is.

Q. I will ask you to file this report, marked as indicated in the quotation contained in the above question.

A. I file it.

350 NOTE.—The report referred to was filed as evidence, marked as stated, and is hereto appended.

Q. Mr. Miller, will you please state whether or not this report, in your opinion, is the proper valuation of the properties of the Bluefield Water Works and Improvement company—I mean by this, the reproduction cost less depreciation?

A. Well, it was believed to be correct when I submitted it; but believing that I was delaying proceedings, I took a chance on it being correct and forwarded it without as much checking as I would like to have done, and I have since discovered a few errors.

Q. Are those errors in calculation?

A. Yes.

Q. Then with the exception of the errors in calculation, the report, you believe, correctly gives the value of the property?

A. Yes. I will call attention to the items to be corrected. Shall I do so now?

Q. Yes, just go on and give the correction in any calculations.

A. I think I mentioned the other day that I had omitted the lead and yarn for pipe joints in the line from Ada springs to the city, which is mentioned in my report on page 16.

Q. How much should be——

A. The lead omitted there—lead and yarn—amounts to $2,808.

Judge Sanders:

Q. You mean that is to be added to your estimate of the value?

A. That is to be added to my reproduction cost.

351 Judge Ritz:

Q. You will please state what item on page 16 that should be added to.

A. That belongs to item 9, sub-division B.

Q. There should be added to that item 9, sub-division B, an item for lead in the pipe joints, $2,800?

A. $2,808.

Q. $2,808. All right.

A. And lead and yarn was omitted for the pipe joints on the Beaver Pond spring line, item No. 10, page 17. That amounts to $277.

Q. It is to be added to that, you say, for lead?

A. $277.

In the boiler plant of the Ada pumping station, item 18, page 21, I discovered that I started to figure the price for each boiler separately, intending to multiply by two, but I added the cost of one boiler to the setting of both, and I have omitted the price of one boiler—that is, the metal work, iron and steel for one boiler, necessitating an addition to my figures of $1,600 for that item.

Q. That is boiler plant at Ada?

A. Yes, sir. That, let me say here, was found to have been the price actually paid by the company for each of those boilers in 1906; and in the light of other information I had on cost of boilers of that kind and size, was a reasonable price to use here.

Q. Was that $1,600 for one boiler or both boilers?

352 A. $1,600 is the price of the steel and iron work only for each boiler.

Q. And, as I understand, you have one of them included already?

A. Yes.

Q. And simply have to add the other one?

A. Yes.

And in item No. 47, page 32 of my report, there is an error in the quantity of steel in the two twin tanks. I have omitted to double the weight of structural steel in the roof trusses, which I computed for one tank only. There should be added 19,630 pounds, at 4½ cents. In other words, the fourth item—the fourth entry under item 47 should be doubled, adding $883 to my cost of reproduction. Now, my quantity of steel in those twin tanks is much larger than is given in the inventory. I have 526,840 pounds, whereas the inventory states the quantity to be 486,000.

Q. You have 40,000 pounds more?

A. Yes. I have actually computed out the number of square feet of steel plate work of each thickness, and applied the weight per square foot to each thickness, and gotten that figure. I have not applied quite as large a price per pound as Mr. Alvord has, but we arrive at substantially the same total cost. In view of a number of contracts that I have seen and have copies of for work of that kind, I firmly believe that the price that is used here, 4½

353 cents a pound, is sufficient to cover that cost; and I find that it is substantially the same as was paid for these tanks.

Q. Now, is that all of the corrections you desire to make in the report?

A. That, I think, is all.

Q. Then, with the——

A. Of course, the addition of these items will increase the total, to which there are some overheads added, usually based on percentage of direct cost of the several items making up the property; and so there would be some overhead cost chargeable on the sum of these additions.

Q. Then, with these corrections made in your report, the only difference in the items of your report and the items of the inventory filed are the ones that you noted a while ago in quantities?

A. I won't say that; I believe there were some other minor discrepancies, which I didn't consider of enough importance to list out, and yet I used a *l*sightly different figure.

Q. Well, there were no substantial differences except the ones noted?

A. No substantial differences.

Q. Mr. Alvord stated in his testimony that the main discrepancies between you, so far as valuation was concerned, was the unit price that you used being a different one from the one used by him. What have you to say about that?

A. Well, in many cases that is true. In many cases the difference is entirely the difference in unit price.

354 Q. Mr. Alvord filed with his testimony statements of the items of difference between your report and his. This is

marked, "Discussions of Differences of the Values" between your report and Mr. Alvord's report. I wish you would take this statement and explain, if you can, the differences between the two reports, and why you arrived at the conclusion that you arrived at in making your report, instead of the conclusion that Mr. Alvord arrives at.

A. There is a large difference between us in item No. 1, where Mr. Alvord has allowed $14,455 as the preliminary cost, being the expenses incurred previous to any actual designing and constructing being undertaken. He has explained what work is to be done under this heading; but I never have been able to feel that there was any particular relation between the amount of that work and the cost of the property that was to be built after the negotiations were completed; and it didn't strike me as reasonable, under the conditions existing here, where I assumed the existence of these springs was a matter of common local knowledge, to require any expert engineering reports on source of supply, or other expert engineering reports of a preliminary nature; so that I have not included in my allowance any expert engineering reports of a preliminary nature. I attempted to find out what expense the company would incur in filing the incorporation papers, and the fees paid for the right to—fees paid on capital stock to be issued, and expenses of that nature,
355 which are required by the laws of the state; and I found that they would be very small. I took into account the fact that the franchise under which this plant was built, and has since been operated and extended, was the briefest franchise that I had ever seen; it didn't seem to me to have involved the expenditure of much time, money, or talent in securing it; and I don't believe that such a franchise would now involve the expenditure of any considerable money. I felt that under the conditions existing here a thousand dollars was a reasonable allowance for the expenses of a preliminary nature. I hardly feel that it would be reasonable in a company to spend nearly $15,000 in finding out whether a project to building a water works for a city of 15,000 people was feasible or not—would be justifiable.

My figures on the values of the real estate of the company are necessarily somewhat uncertain, more so than on the rest of the items, but they are based upon knowledge of what was paid for the several parcels of real estate, the time the company has had them, and some information given me by Mr. Crenshaw, of Bluefield, as to the changes in prices of real estate in and about Bluefield during those intervals for which the company has had these parcels, and other present conditions as to values of real estate given me by Mr. Crenshaw. They are not his figures—that is, the figures I have presented for real estate values here are not his figures, but they are in-
356 fluenced by information which he gave me, and by the original costs. I have, I think, in all cases put a somewhat higher figure on each parcel than was paid for it, allowing that there had been some increase in each case, depending upon length of time since its original purchase and its location. Some of these parcels of real estate I have stricken out or omitted from the column headed

"cost of reproduction new less depreciation," because I considered that so far as water works service was concerned they had depreciated to no value for that purpose.

Q. Now, before you get off of that item, Mr. Miller, did you omit any of these pieces of real estate for water works services that Mr. Alvord didn't omit? I believe Mr. Alvord has omitted some of them too.

A. Yes, I omitted some that he did not omit.

Q. Now, I wish you would take up those that he didn't omit and state why you do not think they are of any value for water works service.

A. The first item of that kind which I see is spring tract No. 20, on which I put a reproduction cost of $100. Mr. Alvord has $25 for the land alone, my figure including the spring on that land. I omitted that from the present value altogether because the spring is condemned and not used and the land can't be used for the purpose for which it was acquired—water works purposes. I
357 know of no use to which the company can put it in connection with the furnishing of this service; and I therefore omitted it.

The same is true of spring No. 22, on which I put a reproduction cost new of $1,500, against Mr. Alvord's $25. He has retained that item—both these items in his present value.

Another item I have omitted——

Q. Why did you exclude that item?

A. Because the spring is not used.

Q. Well, is it useful?

A. No, I understand it is not. My information is that it is not.

Q. Well, what is the reason?

A. The spring is polluted, I am informed.

Q. What spring is that?

A. Spring No. 22, that is the one just east of the Ada pumping station along East River.

Q. That is the Estill Bailey spring?

A. I presume so.

Q. The one that Mr. McCarthy talked about as having been polluted by the city?

A. Yes, sir. I think perhaps I was confused in my discussion of spring No. 20. I then had in mind that that was the condemned spring. That is spring No. 22. Spring No. 20, I understand, was never completely developed, and has not been used and is not being used. I didn't consider it used or useful, and omitted it.

The next item which I have omitted and Mr. Alvord has
358 not is 99.36 acres purchased at site of reservoir and dam. The dam having become useless, obsolete, and abandoned, I considered the tract of land purchased for that purpose as in the same class with the dam.

Q. Do you consider it useful for any other purpose in connection with furnishing water to the city?

A. I don't know of any use to which that can be put unless the dam can be reconstructed and used for the purpose for which it was

originally acquired. It seems to be not used or useful at the present time.

Those are all of the parcels of land which I excluded that Mr. Alvord has not, but there are some improvements—buildings and improvements in the same category. Among them would be the one-story cottage of three rooms at Ada pumping station. The inventory states that it is in bad repair. I saw it, saw that it was not used, and was not in condition for use. Some of the roof was gone, some of the floors were gone, some of the walls were gone. It was a cheaply built frame cottage sitting on posts near the Ada pumping station, projecting over the edge of the creek, if I remember aright.

Q. And if you were restoring this plant or reproducing this plant at this time you would not reproduce that cottage as part of it?

A. I certainly would not. I have figured its original cost here, given a figure of $300 in my cost-of-reproduction-new; but
359 I considered that it had depreciated the amount of that cost, and left it out of my present-value column.

The same is true of the tool house at spring No. 6.

I didn't put a separate value on the house, barn, crib, spring house, orchard, fences, et cetera, on the Henry Bailey farm. My information was that those improvements were all there when the farm was bought. The farm was bought as an improved farm; the cost of those improvements were reflected in the price paid. I have included the farm at an increased price over that paid, and considered that my figure included those improvements.

Q. Mr. Miller, are those improvements now used, or are they useful to the company in furnishing water to the city?

A. Well, I am informed that one of the company's employes lives there, but these buildings, these orchards, some of these improvements would not be necessary to an employe of the water company. They were apparently put there by the farmer who originally lived there; and for water works purposes I wouldn't consider them as of any use or value. And as to the price of that house, I did make an estimate of the reproductive cost of the house, and it was less than half of Mr. Alvord's figure of $2,000. That house is only a little larger in plan and in cubical contents than the cottage at Beaver Pond spring; and it is a very little more expensive type of
360 construction—quite similar in type of construction; and my figure of reproductive cost of that house, after adding an allowance to cover contingencies, as I believed, was $900. I have not considered more than a thousand dollars as a reasonable figure for that house, cost of reproduction.

Q. New.

A. The inventory states it to be an eight-room house, and the employe who lives there, or lived there in January, told me it was a seven-room house. I haven't inspected the interior of it, but I have passed by it and seen it, and it is illustrated in the inventory.

Q. At any rate, you have included the value of this farm and the improvements as one item in your report, and have not undertaken to include the improvements separately?

A. That is true.

185

Q. Before we pass from that farm, how large is that farm, Mr. Miller?

A. It is described as 236.25 acres in the inventory, page 12.

Q. I wish you would state whether or not that farm as a whole is useful for the purpose of furnishing water to the city.

A. Well, it undoubtedly has an effect in preventing contamination of the water—the waters of the Ada spring—to a greater extent than if the company didn't have control of that land.

Q. Then you consider it is useful for that purpose?

A. I think so; yes.

361 Q. Preventing pollution?

A. Yes. At least, in part; I am not sufficiently familiar with the topography there—topography and geology—to see that the whole of it is really needed for that purpose.

I haven't put any separate value on the farm house and tool house on Ruble farm, as Mr. Alvord has done. I have included the cost of those improvements in the price put on the farm. They were on the farm when the company bought it, according to my information. The farm was bought as an improved farm, to the extent of those improvements; it was bought only a comparatively few years ago, at a price of less than $350, although there is 46½ acres in the farm. I have put that item in at $500, cost-of-reproduction-new, and retained in the present value column $100 of that, for the reason that the farm was purchased so that the company might acquire the riparian rights to the stream from Jarrell spring, and retained those rights, selling the farm, as it would have no use to them.

Q. Well, if the Jarrell spring is not used or useful for water works purposes then this would have no use for water works purposes in this connection?

A. I think that would be true Mr. Alvord puts a larger present value on the farm house and tool house—in fact, nearly

362 double the price originally paid for the farm with those improvements. Now, those are all of the items, I think, under the head of real estate and right of way, which I have omitted and which Mr. Alvord has included; but there are one or two other items that I would say a little about. I carefully estimated the cost of construction of such a one-story frame cottage as that at Beaver Pond spring, and made what I considered a liberal allowance for contingencies after figuring out the amount of materials and estimating the labor involved in constructing that cottage. I reduced it to the price per square foot. I expressed the value in a price per square foot ordinary valuation for the reason that I assumed that Mr. Alvord would do likewise, inasmuch as the inventory had given its area, and that is sometimes the method of engineers in figuring buildings, to express the cost on a basis of so much per square foot for that particular type of building, or the cost per cubic foot; and I figured it out carefully, based upon prices of lumber particularly that were furnished me by local parties. The Georgia Lumber company gave me a schedule of lumber prices that are in effect here. I also got other similar figures from another lumber company here in Bluefield as the basis of my estimating on any structures requiring

lumber. I figured out the cost of the Beaver Pond cottage rather carefully; I reduced it to a price per cubic foot and per square foot as a basis of an approximate estimate of some of these other
363 cheaper structures, such as the cottage at Ada pumping station and small farm buildings.

In regard to the office building, I made a very careful analysis of the cost of that building—probable cost of reproduction, I mean to say. The building was built in 1914, I am informed. In fact, I went there and examined the bills paid for various parts of the work; and inasmuch as that was of such recent construction, I used the actual cost of a number of things—a number of parts of the structure. For example, I had the amounts of the bills of the Georgia Lumber company for the doors and windows and the contract price of the wiring and lighting and fixtures, and the Whitlow bill for painting and papering, and the Bluefield Tinning and Plumbing company's bill for roofing of the office building and garage, and for other data—other parts—I got figures from local parties who do work of that kind, so that I feel sure—and after making that analysis I added something for good measure—contingencies. My total was originally $4,218, which I understand was more than the building cost, and I called it $4,500. I see Mr. Alvord has $800 more than that for the sum of the two buildings. You wish me to go right through explaining the items?

Q. Yes, just go through and explain how you arrived at your conclusion in regard to all these items.

A. In regard to the springs, owing to the fact that in each
364 case—in the case of each spring there were so many items of similar nature, and other cases, I grouped the various kinds of improvements on all the springs of each group, and figured the cost somewhat differently from what Mr. Alvord has done, where he figures the improvement of each spring separately. I have shown the grouping of those items in my report on page 11-*a* and 11-*b*.

Under the item No. 3, gravity springs, I find a total of 1,243 8-foot chestnut posts, the price of which I obtained from local lumber supply concerns, and to that price I have added 20 cents each for hauling, carrying such distance as they would be carried, and setting. The price of the fence wire I also obtained from a local hardware supply house, although I had some data on material of that kind; and to the rest of the items I applied such unit prices as seemed to me to be adequate to cover the work under the conditions which governed it. Mr. McCarthy showed me a statement—allowed me to make a copy of the statement of the cost—actual original cost—of the improved springs, and I have always been somewhat uncertain as to just what items—as to the extent of the work, I should say, and materials covered by the figures which he gave me. I understood that the company was unable to show any analysis of the cost of the several kinds of work and material involved here, and had nothing but my own judgment as to the unit prices applicable to the various sub-divisions and the total cost as given me by
365 Mr. McCarthy.

Q. Well now, you say you had nothing but your own

judgment, Mr. Miller. What do you mean by that? Do you mean that you didn't make any inquiries about the cost of labor and cost of materials here?

A. Oh, no. Of course, I had information as to the current rates of wages paid here for various kinds of labor, but under different conditions the same rate of wages for labor would make radically different unit cost; and I had to apply my judgment, of course, to the conditions and the rates of wages current here in Bluefield to get unit prices to apply to these quantities. Now, one can't go over the ground today and see just how much grading has been done, how much rock has been hammered to pieces by hand hammers, and so can't determine the accuracy of the quantity stated here in the inventory for the various kinds of work and materials involved; but I have based my total estimate on the quantities as stated in the inventory, assuming them to be as near correct as anyone can now determine them to be. I think, however, there is enough uncertainty about the quantities and also about the unit prices to be applied to justify a statement that no estimate—no matter by whom made, is as good evidence of the cost of reproduction of that work as the original cost, if it could be ascertained, modified by such changes in the prices of materials and labor as has occurred
366 in the mean time, or since the work was done. That is work of a very difficult nature; it is very unusual work, and work of a kind on which it is practically impossible to get any real reliable unit prices.

The same is true of item 4, Ada springs, that this work is all of a very unusual nature; it is up on the mountain side, and materials have to be carried to considerable distances. I would call attention to the last three columns on page 11-*a* of my report. In the third column from the right I have tabulated the distances stated in the inventory as the distances which the materials had to be carried, and they range from no entries at all in some cases, and from 300 feet to a thousand feet. There is one spring, spring No. 2, where the distance to carry materials was a thousand feet. Two other springs involved the carrying of materials 800 feet in each case. Seven springs involved the carrying of material 500 feet. I went over the ground and verified this, checked those descriptions, and I think they are about right. Those are not extremely long distances to carry the comparatively small quantities of materials involved.

Judge Ritz:

Q. Those are the distances, I believe you stated, that you took from Mr. Alvord's inventory?

A. Yes, sir.

Q. And you checked them for their accuracy?

A. Yes, sir. I have noted on this page 11-*a*—noted the
367 dates of purchase of the springs, and the dates the improvements were made. It appears that the improvements have all been made since 1906.

Q. From whom did you get that information as to the dates?

A. From the inventory. I note that the statement shown me by

Mr. McCarthy for the amount spent on improvements had no entries for the years 1904, '5, or '6, and that the cost from 1907 to April 1st, 1915, for the gravity springs, amounted to $8,034.05, and for the new springs $16,829.44, making a total of some $25,000 almost; and Mr. McCarthy informed me that those amounts included the pipe lines down from the springs—in the case of the Ada group, down from the Ada spring itself. Taking the history of the development of the gravity spring group—taking that history into account—I could not believe that the cost shown for that group included very much of the pipe lines down from the springs, but on my estimate, only last night, I made a tabulation of the items which according to the information I had made up the work covered by these costs shown me by Mr. McCarthy, and against about $25,000 I had a total of about $44,000.

Q. In your estimate?

A. Yes.

Q. How much has Mr. Alvord in his estimate against that item of $25,000?

A. I haven't made up the corresponding figures from Mr. Alvord's report, because I wasn't able to pick out the—Well, I might
368 have been able to pick out the items to the corresponding items, but it involved some sub-divisions of items in my report. I have entered the improvements of springs 22 under item 4, page 14, at $1,600. Included in the figure given me by Mr. McCarthy for the total expenditure for plant account on new springs, is an item of $1,568.47 spent in 1907 on spring 22; and I didn't analyze the work involved there in the development of that spring, inasmuch as I considered the spring depreciated to no value: I simply put it in here at approximately the same figure as was spent upon it originally.

Q. That is, the spring has been taken out of use because of its pollution?

A. Yes. I will go to item 9, page 16, pipe lines Ada springs to city. There is a comparatively small difference there, and there should not be much difference; it is a matter of tonnage and price per ton of pipe and specials, although there was a few valves included. I have explained in the text of my report how the price per ton used by me was derived.

Q. Is your price per ton different from Mr. Alvord's price per ton?

A. I have used $26 per ton for the 6, 8, and 10-inch pipe on cars at Bluefield, and I have allowed an extra of $2.50 a ton for hauling from cars to place of use. I believe Mr. Alvord figured $26 including cartage. There is considerable difference between us in the item of laying pipe, sub-division B of item 9. The differ-
369 ence won't be as much as it appears here when my correction of $2,808 is made for the lead and yarn omitted, although that would still leave Mr. Alvord's estimate nearly double mine. I believe that the prices I have used here ought to cover the cost. I have not been able to ascertain what the original cost of that work was. It seems it was impossible to segregate it from the accounts. There will be a rather small difference between us when my collection

of $277 is made to item 10, page 17. That, again, is pipe line, being the Beaver Pond line. My total as corrected would be $3,863, against Mr. Alvord's $4,174.

There is considerable difference between our estimates on the Ada pumping station building, which is due in part to our differences in quantities of excavation and in concrete work and other work, and in part to differences in unit prices. If my calculations of quantities are correct, part of our difference is justifiable in that way.

Mr. Fox:

Q. The excavation at the Ada station was included in the stipulation, wasn't it, of differences that we went into before we entered into this matter?

A. Yes.

There is another item of difference that I didn't—that is not in the stipulation, in regard to steel stack foundation, item 12. I couldn't calculate but 165 yards of excavation, figuring from the original surface, four feet below the present surface. The
370 inventory shows 187 yards of excavation there, and I didn't find but 75 yards of concrete, according to the plans of the foundation. I calculated the weight of the steel plate work, the ladder, and the cast iron in the base wrong, and in the anchor bolts; and in correspondence with the builders of that structure found out that the weights as they had them were a little more than I had figured. According to their statement the total weight of all those three items of steel and iron exceeded mine by 2,817 pounds. I would be inclined to make an addition of that weight—that extra weight, above what I calculated, because I assume that it must be there. For the amount of fire brick and red brick I have relied on the inventory. I might say that I had information as to the contract price of that structure, as well as numerous others of the same or similar nature. There is comparatively large difference in our unit price of a small item, under heading of coal chute, item 13, 127 *suq*are yards.

Woven fence wire in roof, I figured that at 5 cents a square yard, Mr. Alvord, 50. For 32 cents one gets a rod of 52-inch width of fence wire, which would make several yards—I haven't figured it out—so it couldn't be 50 very well. There is not much labor involved in placing it; there is some, of course.

You wouldn't wish me to discuss all of the items—only those on which there was a material difference?

371 Judge Ritz:

Q. Yes, just the ones on which there is substantial difference. The others there is no use talking about.

A. The Worthington pump is entered in my valuation at a reproductive cost of $900, to which I have added other items for the foundation and the bed plate and suction and discharge pipe, as per inventory. Mr. Alvord includes an item of $1,200 for that pump. I know the actual cost of a number of pumps of that type and similar

size which would run very close to $900, or less. I think I have made an ample allowance for that here. I don't know what the pump originally cost. I believe the inventory is in error in regard to the dimensions of that pump, having two of the figures reversed.

Judge Ritz:

Q. What figures are they?

A. The inventory states the diameter of the steam cylinders 20 inches, diameter of the plungers, 15 inches, length of stroke, 10¼ inches. That 10¼ inches is probably the diameter of the plungers, and the 15 inches is probably the stroke. I had to change the dimensions in that way in order to get the capacity as stated, one and a half million gallons per day.

Judge Ritz: That is correct, is it, Mr. Alvord?

Mr. Alvord: I should think so. His criticism is proper.

The Witness: My price of $900 is based upon a reversal of those figures—a pump of the dimensions which I assumed this to
372 be with those figures reversed. I think I have already mentioned the correction to be made to my item No. 18, boiler plant, page 21, to which there must be added $1,600, which would make my total cost of reproduction new $5,917, against Mr. Alvord's $7,444.

Judge Ritz:

Q. How do you account for that difference?

A. A little of it is in the piping. I have $107 against Mr. Alvord's $188.54, and the rest of it seems to be principally in the boilers and settings—brick work of the boilers. An addition of $1,600 to my item on boilers and settings would make $5,433, against $5,848, or a difference of $415 there. My figure will have included the steel and iron work on the boilers at the contract price, which, in view of other data, seems to be a reasonable price to use now.

Q. Well, what data did you have to fix the value of those boilers?

A. Well, I didn't bring along all my data.

Q. What did you have to base your judgment on?

A. I had the contract price of numerous other boilers in other places, boilers of that type and size. Unless Mr. Alvord put the steel and iron work in at a larger price, our difference would all be in the brick work, the settings of the boilers. Now, while I have stricken out the land and the development of spring 22, I have not stricken
out all of the—haven't fully depreciated, to nothing, I mean,
373 the connection from that spring to the pumping station, because there is a considerable tonnage of pipe and some valves and fittings which could be comparatively easily removed, and would be useful elsewhere.

Q. You have put those in at their value for use in other places?

A. Yes, I have $100. The total cost would be $118 for the material there. Our principal difference—our large difference in the

total for item 22 is principally in the amount of that rock excavation for the foundation of the building.

Q. You have already explained that?

A. Yes. I have depreciated it to nothing, as of no present use or value, to items under item 23, station miscellaneous, whereas Mr. Alvord has treated those quite differently. One is the Wyman simplex 6 by 3¾ by 8 inch pump, which has been standing idle there in the pumping station for years. It was bought for construction purposes, I understand, and is not being used and is not connected up with anything, and I don't see that it has any value now beyond what could be obtained from the sale of it, since it is not used or useful. And in the yard of the Ada pumping station is an old boiler, an eighty-horse-power boiler, which I understand has been sitting there for ten years, having been taken out of the old Ada pumping station. I would depreciate that to nothing; no present value.

Q. Not used or useful in connection with the present
374 water system?

A. No. Mr. Alvord considers that useful, along with several other useful items. Now, my treatment of the estimate on Beaver Pond station, item 22——

Q. 24.

A. 24. —was influenced by my knowledge of the fact that the company was preparing to abandon that station; its usefulness had practically expired; and therefore I depreciated it quite heavily.

Q. Well, in view of the fact that it has been shown that it has been since abandoned, was your depreciation correct?

A. I believe so. There might be enough salvage there to justify the figure at which I have put it into the present value column, $61, even though there was no real use for the building as it stands.

Steel stack and bridging is in the same category.

Mr. Alvord's costs are a little below mine on items 26 and 27, but mine are below his on item 28. Only within a comparatively few days I decided to write the builders of the two boilers that are in that station to get some supplementary data on boilers of that kind, although I thought I knew pretty well what they would be worth; and I have a letter from the builders of those boilers—that is, in reply to an inquiry of mine, in which I asked for the original price and an average—reasonable average price during the five years preceding the date of this valuation. I will read that letter. (Reading.) "We are unable to locate the boilers you refer to on our
375 order book, and we think you must be mistaken about one of the boilers being 60-inch diameter by 16 feet long, as we never put 64 tubes in a boiler 60-inch diameter." The description I gave them was as given in the inventory. I hadn't thought there was any error there; I didn't discover any error in the description of those boilers as given in the inventory. They go on to state in this letter, from the Erie City Iron Works, "In 1891 the approximate price of a 54-inch by 16-foot boiler with 100 pounds working pressure, with fixtures complete, including wall plates and rollers, was

$465. In 1909 the price of the same was $500. In 1914 the price was $490."

Q. What price did you use in arriving at this valuation?

A. My price is $1,100, including the boiler complete with its setting.

Q. What was the price that you used for the boiler?

A. I contemplated a price of about $600, delivered at the place, and $500 for the setting.

Q. Well, how about the other boiler? Did you use the price or a larger price than that given by the manufacturer?

A. Why, the price I included there is practically the same as given for that other size in this letter.

Q. And that is in excess of the price at the time the boilers were actually purchased?

A. Well, there has not been very much change. There has been a little increase.

376 Q. Well, you read there $465 in 1891, and you said you used $600. That is a pretty substantial increase, isn't it?

A. Yes, but these figures in this letter are f. o. b. Erie, Pennsylvania, the builders' works, and there is freight and hauling to be added to get the boiler at the station. The same letter gives the prices for the other size. The 100-horse-power Erie City Iron Works horizontal tubular boiler in 1891 was $670, in 1909 $680, in 1914 $630.

Q. Well, what price did you use in arriving at your estimate you have made of the value of that boiler?

A. I contemplated about $750 for the boiler on the job.

Q. That is $120 more than the price in 1914?

A. Yes.

Q. Do you think that would cover the freight and hauling?

A. I think so, undoubtedly.

Q. What is the next item on which there is a substantial difference?

A. Well, in percentage there was a substantial difference in several small items, but I don't think the amount—the actual amounts of difference are enough to justify much discussion of them.

Now, coming to item 32, there is a difference of 144 tons and——

Q. Well, there is no substantial difference between you on that? Mr. Alvord has it $43,989; you have it $43,103.

A. Yes. I have a smaller tonnage and a large price per ton.

Now, going to item 34, the laying of pipe. I have had a

377 great deal to do in the way of estimating on pipe laying under a great variety of conditions, and have obtained the actual cost of a great deal of work of that kind under various sets of conditions which were also ascertained. In other words, I have had occasion to make analyses of the cost of pipe laying in a great many different places under many different sets of conditions, both as to rates of wages of labor, the kind of labor, and the depth at which the pipe was laid, and the character of soil and material encountered in digging the trenches, and, of course, I found that a set of pipe

laying prices applicable to one case would not be applicable to another. Each set of conditions must be determined, and prices made according to these conditions.

I made inquiry as to the rates of wages paid for labor here, and it seems to be between $1.50 and $1.75 a day for common labor. In Wisconsin it has been two to two and a quarter a day during the last few years, and even up as high as $2.50; and naturally, if the conditions were the same as to kind of material encountered at that depth at which the pipe was laying, pipe laying here would be cheaper than what it is up there, owing to difference in rates of wages.

I think perhaps it might be in order for me to give a little supporting data in connection with the figures I have used on the
378 ordinary work here, or the work where the conditions might be called ordinary or usual, extra allowances being made elsewhere for the unusual conditions of rock excavation and shale excavation and wet work. While, as I have said, I have had the opportunity to collect actual costs and knowledge of conditions for pipe laying in various places, I am going to mention only one as typical and make a little analysis of that. I have here the prices paid by the city of Milwaukee to contractors for the laying of water pipe in Milwaukee according to the city's standard specifications, which call for the furnishing by the contractor of the lead and yarn for the joints, the furnishing of all tools, implements, sheet piling, if any required, all the labor—in fact, everything except the pipe and the specials and valves, which are furnished by the city to him on the job; and the specifications called for the laying of the pipe with its center 6½ feet below the street grade. In 1906 the contract price which applied to all the work of that kind during that year was 31½ cents; in 1907, 29.9 cents; in 1908, 27.75 cents; 1909, 31½ cents; 1910, 32 cents; 1911, 30.75 cents; 1912, 29½ cents; 1914, 32½ cents; 1915, 32 cents. The average of these is 30.8 cents.

Mr. Alvord: What size?

A. This applies to 6-inch pipe.

And there in Milwaukee it has been the custom for many
379 years to call for bids in the early spring on the laying of all pipe which the city may decide to lay during that year—may subsequently decide to lay during that year. The contractor then does not know upon what streets he is going to be called upon to lay pipe for his figures, and these figures exclude any extra—any claims of extras by reason of having to encounter any rock work or any paving or any conditions. All conditions are covered by the contract price made in the spring for the season's work.

Commissioner Northcott:

Q. What depth, Mr. Miller?

A. The center of the pipe 6½ feet below the street grade. Now, it is presumed, of course, that the contractor expects to make a profit. In my estimate on pipe laying I customarily add 15 per cent for the contractor's overhead expenses and his profit. Now,

I deduct the allowance to that extent in this case from this average of 30.8 cents to get what would be the contractor's actual cost, excluding overhead and profit, amounting to 26.8. That includes the furnishing of the lead and yarn for the joints, as well as the digging of the trench and laying the pipe; and for the laying and handling—handling and laying pipe I allow 3½ cents in addition to the 5.8 for the lead and yarn for the joints, making a deduction of 6.8 from this direct cost of 26.8, leaving the cost of laying ditches and trenches, 18.1. In order to lay that pipe the trench would have to be 6.9 feet deep and practically 2 feet wide, making
380 a half yard of excavation per lineal foot; so that his allowance there of 18.1 for a half yard per foot would amount to 36.2 cents per yard, while he has paid $2.25 a day to common labor, 36.2 cents a cubic yard. Now, I figured that under the conditions here where there was no rock work or shale or pumping of ditches required, taking only the ordinary conditions, and with wages at 1.50 and $1.75 a day, 35 cents a cubic yard would be a liberal allowance for the cost of excavating and back filling; and I have built up a set of unit prices which I have applied here on that basis, including the lead and yarn for joints and an addition of 15 per cent for the contractor's overhead and profit, and I have made my allowances in item 37 and 38 for the unusual conditions; and I feel that these unit prices ought to cover the work here. I was unable to obtain from the company any actual—records of actual cost of any particular extensions of pipe lines, and was necessarily guided wholly by other data and judgment.

Going to the next item, of galvanized pipe in street mains, item No. 35, there is considerable difference there, nearly $2,000 between us; and my figures, I believe, were based upon what—were substantially the same, if not exactly the same, as the company was paying for pipe of that kind bought here in Bluefield through a local jobbing house, and which I found were practically the same
381 as a five-year average at the mill, plus freight on a less-than-carload basis. I have collected a great deal of data on the cost of wrought pipe as well as cast iron—made quite a study of it. There is a standard list of prices of the different sizes, and there are published quotations—there are quotations published weekly as to discounts from that list for pipe in carloads at the mills, and for less-than-carload quantities at the mills; and I have worked out a new price per foot of each size and each kind of wrought pipe with ever- change in discount for several years; and I am very sure that I know about what that pipe is worth, and I know what the company was paying for it in 1914 just previous to this inventory date. I haven't put this valuation on the same basis that Mr. Alvord says he does—that is, in reference to this item I have not put it on the same basis of his—namely, buying in carload quantities and constructing it as a wholesale proposition. My figure will include the extra cost due to purchases in small quantities. I figure out here what would be the cost if purchased in carload quantities at the mills, with freight added, and found that my figure shown in the valuation is about 10 per cent above such cost. I think possibly our difference

may be due to my figuring on steel pipe, which it appears from the prices being paid by the company indicated that they were getting steel pipe—buying steel pipe. Possibly Mr. Alvord has
382 figured on genuine wrought iron pipe, and there is a substantial difference between the two in price.

Judge Ritz:

Q. Well, there seems to be some difference between you as to the laying of this galvanized iron pipe. Did you arrive at the cost of laying this substantially in the same way you did at the cost of laying the cast iron pipe?

A. Yes. In this case there is no lead or yarn for joints. The pipes are screwed together. Of course, the threads are lubricated with red lead and oil.

Q. There is also quite a difference between your estimates for unusual excavations?

A. Yes.

Q. I wish you would explain the differences in that regard.

A. Yes; but before doing so, it occurs to me that I should have stated in connection with item 37 that I was furnished by Mr. Wiles, the city engineer of Bluefield, with the cost of various jobs of sewer work here in Bluefield, nearly all of which, I think, were somewhat deeper than the water pipes were laid; and I made some analyses of the—some investigations of the conditions there and the analysis of those costs, as far as I was able to. My figures here for pipe laying and the water system are based upon a cover of two feet over the pipe, the pipe being buried two feet. Of course, there is quite a difference between the cost of work of that depth and *and* five to seven
383 feet, as we have it in Wisconsin. There will be also quite a difference between the cost of laying the pipe with two feet of cover and pipe with four to six feet of cover, as is the sewer work here in Bluefield, I believe. I have taken the amounts of solid rock excavation and excavation of shale in trenches, lineal feet of trench pumping, as stated in the inventory, and applied to those quantities what seem to me to be ample unit prices to cover the work under the conditions as I see them here. My allowance for rock excavation is $3, whereas Mr. Alvord figures $2.50, although he uses $3 a yard on the excavation of rock at Ada pumping station building site, which is side hill work, and much more—can be handled in larger quantities and more rock moved per shot than can be removed from trenches. My allowance of 25 cents a yard for excavating the shale there, as well as the price of $3 per yard for rock excavation in trenches, is in addition to the 35 cents a yard on which I figured the whole work. These are merely extras.

Q. Then these unit prices you have given here, in order to find out what you allowed for laying the pipe in a particular instance, would be added to the unit price for laying under ordinary conditions?

A. Yes, yes.

Q. Now, the item of steam railroad crossings, there seems to be very little difference between you.

A. No; there is a considerable difference in percentage,
384 and a fairly substantial sum between our figures on 39.

Q. Street railway crossings.

A. I don't feel that those street railway crossings involve so much extra expense over the price per foot of straight, unobstructed work as Mr. Alvord's figure would indicate. We put on them here what I would consider a reasonable extra cost above the regular straight work prices. The contractors in bidding on work of that kind, to my knowledge, have never claimed—never bid any extras on making crossings of tracks—under tracks. They frequently encounter work of that kind in the prices that we find they get for making extensions anywhere, and these obstructions are made and covered in the prices they get.

Q. In the next item there is quite a difference, I notice. I wish you would explain that.

A. There is a difference based upon principle. It is a fundamental difference. I have worked on the theory of reproduction assuming the conditions—physical conditions—to be as they were when the plant was put in, so far as I was able to ascertain them. That principle has been adopted by the—by numerous legal authorities—too numerous, in fact, to justify me in departing from it, I thought. There are too many legal authorities that have denied the paving item as a reproductive—as an element of value, I should say, in a case of this kind, to justify me in wasting any time
385 on figuring up how much that element of value might be.

Q. Well, did you ascertain the actual amount of pipe that was laid under paving originally?

A. Yes. This estimate of mine is based upon information given me by Mr. McCarthy that the 8-inch pipe laid on Federal street from Princeton to Raleigh was the only pipe they had ever laid which involved the cutting and replacing of pavements in the city.

Q. And you estimated the value of doing that work?

A. I did.

Q. And that is all the allowance you did make for cutting and replacing pavement?

A. It is.

Q. Is your estimate a liberal one for that?

A. I think so. I don't know what that work actually cost.

Q. That 75 cents that you allowed for that unit price is in addition to the price of digging the trench and laying the pipe?

A. Oh, yes. I notice on Mr. Alvord's price on brick paving with cement foundation is 70 cents a foot.

Q. Five cents below what you allowed?

A. Yes, sir.

Q. And the difference in that item is due to the fact that Mr. Alvord included the cost of taking up and relaying the pavement over all the mains where paving now is?

A. Yes, sir.

Q. And involved simply a question of principle, as you say?

A. Yes, sir.

386 Q. The next item is no substantial difference?

A. Not much difference in amount on item 42, although it made quite a little percentage.

My item 43 is larger than his, due, I think, to my inclusion of the fitting at the main to the pipe between the main and the hydrant, which perhaps Mr. Alvord did not include.

My estimate on item 44, services and fittings, was based upon what I understood to have been the fact as to who paid for the services here. I appear to have had a misunderstanding as to that, and this is another item of mine that is subject to correction—honest correction—and should be changed by the addition of the cost of a number or services which the company has put in at its own expense.

Q. Your item, then, should include, according to your theory, the cost of putting in the services which the company did put in?

A. Yes, that is it.

Q. Mr. Alvord's item includes not only the cost of the services that the company put in, but the services that were put in at the expense of the property owner, I believe?

A. Yes.

Q. That is the difference between you on that?

A. Yes.

Q. That involves a question of principle likewise?

A. Yes. By the way, I have not determined, as I might have done recently, what my figures would be on the number of
387 services the company has put in. I didn't know until this week that the company had put in any.

Q. Could you make a calculation of about what you think that should be and give it this afternoon?

A. I will be glad to make an estimate.

NOTE.—At this point, it being 12:25 o'clock p. m., a recess was taken until 2 o'clock p. m. of the same day, at which time this hearing was resumed as follows:

Q. I believe, Mr. Miller, the last item you had was the unusual excavation over these services, and cutting pavement, which Mr. Alvord figures about $24,395.

A. Yes. Well, I have included in that, too, what was my understanding as to what the company had done at its own expense, which I subsequently learned was a misunderstanding. I have included only the furnishing and placing of the corporation cocks in the mains.

Q. Well, Mr. Alvord, I believe, testified that his information was that there was no pavement cut for the purpose of putting in these service pipes, and that being true, the estimate that you will make for putting in those services which you omitted will cover all of this item, as well as the preceding item?

A. It wouldn't cover pavement, under my theory.

Q. It is put upon the condition that there wasn't any paving cut?

A. Yes. I presume I will have to pass that item for the
388 present, pending later making——

Q. Now, meters in service—there is practically no difference between you on that?

A. There is a small difference, but there, again, I note an error in the inventory. The total number of meters of all sizes and kinds is entered at 1,467, but my addition of the numbers of different sizes and kinds gives 1,567. I notice Mr. Alvord has added an installation charge on each of 1,467 meters. I have included the installation charge in the different prices that I have put on the different sizes and kinds.

Q. Well, did you figure these meters at the actual cost at which they can be procured and allow a reasonable item for installation?

A. Yes, I did. I have, I believe, entered all of these—I have entered some of them, I believe, at list prices, although there is some discount obtainable on every kind, I believe, in some way. That is in line of the information I have; and we are not far apart on the total.

Q. In ascertaining all these values—the differences not being great in the remaining items—where it is ascertaining values of physical properties, I will ask you to state if you procured, as far as you could, the actual cost of such articles as were necessary to be furnished in order to do this work and added thereto a reasonable allowance for the doing of the work based upon the facts
389 that you ascertained, as you have heretofore testified to?

A. Well, I obtained substantially all the data as to actual cost of materials recently purchased and work done that I understood was available. I don't recall having asked for or obtained any information as to the prices paid for meters by this company.

Q. I don't mean as to the prices paid, Mr. Miller. You misunderstand me. I meant at the prices for which they could be procured.

A. Yes, yes. I have information of that kind on everything included in this property in the way of material. That same error of a hundred in the total number of meters occurs again in item 46, the number of meter boxes installed. I have a hundred more than Mr. Alvord has, but I have——

Q. I notice in item No. 53 there is quite a discrepancy between the figures given by you and Mr. Alvord, this item being for engineering and superintendence, and I believe that Mr. Alvord's statement of it was—at least, what his basis of it was, would be the expenses of constructing the plant and engineering expenses during construction. I will ask you to state how you arrived at that item, as obtained in your inventory.

A. Well, I meant to cover the same cost that Mr. Alvord did, and applied the same percentage, but, of course, to a different total of the preceding items.

Q. And that is what you believe would be a reasonable
390 amount to be expended in the construction of such a plant as is here now, if it was to be reconstructed, for superintendence and engineering?

A. Yes, sir, I do. Five per cent is very commonly used in estimation work for the item of engineering and superintendence, almost universally used, as far as my observation goes; and it is a reasonable allowance.

Q. Administration and legal costs, and general contingent costs. There is some difference between your amounts on these items, but I believe they are accounted for, perhaps, in the application of the same rate of percentage to a different physical valuation. Is that true?

A. No, not exactly. Mr. Alvord's percentage is 2, and mine is 1½.

Q. From your experience and observation, would that be a fair percentage to apply to the physical cost of the work for general administration and legal expenses?

A. I think the allowance I have made in this case ought to cover the costs included under this head.

Q. And that is also true of general contingent costs, is it?

A. Yes, sir. A good deal of care has been taken in this case in compiling a complete inventory, but regardless of the amount of care that may be taken by the one preparing the inventory, there is bound to be some forgotten—some unforseen and forgotten
391 items; and as Mr. Alvord has said, there are likely to be differences in the contingencies, in reproducing the same property, by a different set of people. The human element has its effect.

Q. Mr. Miller, Mr. Alvord has applied to his cost of reproduction new certain rates of depreciation, which I believe he states would amortize the plant in a different number of years, depending upon the particular structure to which it was applied.

A. Yes.

Q. I notice you have also applied certain rates of depreciation. I wish you would state upon what theory you applied these rates of depreciation.

A. My theory is the same as that of Mr. Alvord, which he has explained. It contemplates the setting aside of enough money each year, into a fund assumed to be earning interest, and that interest compounding, so as to build up a fund at the estimated—at the end of the estimated life of the item which will replace that item at the end of that life, or period of usefulness; and I have, in determining the depreciation of each item, attempted to estimate its period of usefulness and the period within which a fund must be built up with compound interest at 4 per cent to renew that item at the end of that time.

Q. You have adopted, then, exactly the same plan, so far as this depreciation item is concerned?

A. Yes, but possibly some differences in the length of different periods of usefulness.

392 Q. Well, in making your valuation, I wish you would state whether or not you gave to these various items the life which your experience teaches you they ordinarily have, under conditions similar to those that exist here.

A. I have taken what I considered to be a period of usefulness of each item, as near as could be determined, being influenced not only by the rate of actual physical decay, but the changes in conditions which will shorten the actual period of usefulness below that which it might have from the standpoint of physical decay only.

Q. Now, just what do you mean by that?

A. Well, to take an illustration—Take, for example, this Beaver Pond pumping station. So far as the rate of rot of the materials in the building is concerned, that structure would have a very long life as compared with the period of usefulness which I have considered it to have in this case. It actually has had a period of usefulness of something like 20 years, if I remember the date——

Q. What you mean by that, then, is structures or parts of the plant becoming obsolete because of their incapacity to perform the service that will be required of those parts when the conditions change?

A. Yes.

Q. In addition to the valuation that Mr. Alvord places upon the real estate and springs of this company, he also puts a valuation of $50,000 in round numbers upon these spring properties as a water right valuation. I wish you would state whether or not, in
393 your opinion, there is justified any addition to the valuations you have given for these properties in your valuation on this account. A. I feel that my figures have covered that value of the water as well as the land which was acquired in these several parcels. I don't feel that there is any addition to be made to my figures by such reasoning as Mr. Alvord follows in determining that amount of $50,000.

Q. Mr. Alvord has filed a statement giving his views of the proper distribution of the earnings of the applicant as between what he calls the public service and the service to private consumers, and I believe you have also treated that subject. I wish you would state what the result of your conclusions are along that line as compared with the conclusions Mr. Alvord comes to; I mean as to the percentage of the service which should be borne by private consumers and the percentage of the receipts of the company which should be borne by the public service.

A. Mr. Alvord has gone a little further than I have and apportioned operating expenses as well as property value, while I have apportioned only the property value as a basis for the division of the items of net return on value of property and depreciation and taxes. Those three items I would apportion, 27½ per cent to the public hydrant service and 72½ per cent to the private service. Now, those ratios or percentages are not applicable to the division or ap-
394 portionment of operating expenses.

Q. Now, what was that 27—That was the cost of the plant?

A. Cost of the plant.

Q. You apportioned that 27½ and 72½?

A. Yes. I have not dealt with the operating expenses at all.

Q. Well, what, in your judgment, would be a fair percentage of the receipts of the applicant that should be paid by the public serv-

ice and a fair percentage of the receipts of the applicant that should be paid by private consumers?

A. Well, without making a detailed study of the operating expenses and a classification of them, I could only venture a guess as to what the percentage of gross income which should be in hydrant rentals might be, but I think Mr. Alvord's percentage of 35 is not materially in error.

Q. You think, then, that about 35 per cent of the gross income of this company should come from the public service, and about 65 per cent from private consumers?

A. From my personal knowledge, that seems to be a reasonable percentage. It might not be just what I would arrive at after an analysis and study of the operating expenses.

Q. Yes. Of course, that is—Theoretically Mr. Alvord is correct?

A. Yes. It is based upon the relative costs of furnishing
395 these two kinds of service from two independent plants.

Q. And then turning the two plants into a composite plant and dividing the expenses of one between them in the proportion that each bears to the whole?

A. Exactly, yes.

Commissioner Northcott:

Q. It is true, isn't it, Mr. Miller, that a very small part of the operating expense should be charged against the fire service?

A. Yes, I think a smaller part of the operating expenses usually fall to the fire protection service, and that being the case, the ratio for fire protection service might be less than my percentage of the property.

Q. Have you made any calculation in general for towns of 15,000 inhabitants showing that percentage?

A. Several of them; quite a number of them; and I have set forth in my report a table not numbered—on a page not numbered—showing the hydrant rentals or the fire protection service charges established by the Railroad Commission of Wisconsin in water rate cases affecting utilities in cities of various sizes; and I think I am safe in saying that in all of those cases I have made the apportionments of property and in some of the cases have apportioned the operating expenses.

Q. But you don't show what percentage here?

A. No, I haven't those figures with me, but I show the former hydrant rentals and the hydrant rentals as fixed by the
396 commission.

Q. But you don't know what relation that bears to the whole?

A. No. And I also show the size of the city affected by this change in rates.

Q. Can you give us any information as to the percentage they bear to the total revenue of the company?

A. In cities of 15,000 inhabitants? I am afraid I could not venture any figures from memory which I could testify were correct.

Judge Ritz:

Q. Mr. Miller, assuming that the applicant is now receiving an adequate return upon the capital invested, what can you say as to the present distribution of this return between the public service and the private service?

A. It seems to me the public service is not bearing a fair proportion of the total cost of both services.

Q. Then assuming that the rates should be increased, it necessarily follows that before there should be any increase to the private consumers the public service should be increased until it reaches that fair proportion; that would be true, wouldn't it?

The Witness: I didn't quite follow that. Read it.

(Read.)

When you say assuming the rate should be increased, you mean——

Judge Ritz: Instead of rate, say, "assuming that the gross income should be increased." That is what I mean.

397 A. I would say yes.

Q. Of course, that is argumentative.

Is there anything else you think of that you want to explain, Mr. Miller?

(No answer.)

Commissioner Northcott:

Q. What is your total value as to the reproduction-new cost?

A. Well, before applying the reductions that I have mentioned here, it was $383,122.

Judge Sanders:

Q. Now, after applying the corrections what would it be, Mr. Miller?

A. Well, I have one correction to make yet. I haven't figured out the services.

Q. Excluding that, what would it be? You are working on that, are you? You will give us that information?

A. Yes.

Q. Suppose you wait till you get the information. Then you can put it all on the $383,000.

Commissioner Northcott:

Q. Well now, there is a big difference between you on the two items of laying mains and laying services under pavements, isn't there?

A. Yes, sir.

Q. Aside from those two items, what is the difference between your estimate and Mr. Alvord's.

Mr. Alvord: I have that tabulated, if you want it read into the record.

Commissioner Northcott: All right, sir.

398 Mr. Alvord: The greatest item between us is water sources, on which my estimate is, on which my estimate is $34,468 higher than Mr. Miller's. The second greatest difference is cutting through pavements over mains, on which I am $27,511 more than Mr. Miller. The third difference is in services, part for cutting and part for the correction he is going to make, on which I am $19,868 higher than Mr. Miller. The fourth greatest item is preliminary expenses, on which I am $13,455 higher than Mr. Miller. The fifth item is contingencies, on which I am $10,956 higher than Mr. Miller. The sixth item is engineering and superintendence, on which I am $6,894 higher than Mr. Miller. The seventh item is pipe line to the city from the gravity springs, on which I am $6,630 higher than Mr. Miller; and the 8th greatest is the pipe line from the Ada springs, on which I am $5,814 higher than Mr. Miller, subject to Mr. Miller's correction on the last two items. Ninth is the unusual excavation on the distribution system, on which I am $4,536 higher than Mr. Miller; and the tenth is laying cast iron mains, on which I am $4,040 higher than Mr. Miller; and the rest of the items are smaller than $3,000 apiece.

Cross-examination.

Mr. Fox:

Q. Mr. Miller, on your direct examination, when asked in regard to your experience, you stated at what different occasions you had made valuations. I wish you would please state what ex-
399 perience you have had in creating and erecting water plants similar to the one in Bluefield.

A. I haven't any similar to the one in Bluefield.

Q. Or in any water plants.

A. I haven't done anything more than draw plans and specifications for one or two small plants—village plants.

Q. Have you ever actively assisted in carrying through these plants from their incipiency to the time the plant was put into operation?

A. No.

Q. You stated in your direct examination in regard to several of the items that you had no data from which you could arrive at a conclusion except the application of your own judgment. Do I understand from that that in most of the items you were basing your judgment upon the actual cost at the time they were purchased?

A. Oh, no. I did not make myself clear when I made the statement that I had no data upon which to base my figures as to unit prices for that work. What I meant to say was that I had no actual costs of exactly similar work, recent or ancient; and I have to determine the unit prices which I used from a comparison with the costs which I know were obtained in somewhat different work. They were taking into account the differences in the nature of the

work, and all the differences and conditions that affected the difference in costs.

400 Q. Well, all of these items have to be arrived at by the application of judgment to the costs of purchasing and instituting these different items at this place, did they not?

A. Yes.

Q. We come to the first item, as tabulated in the inventories and in the valuations, which is preliminary cost. I believe you stated on direct examination that you could see no relation between this preliminary work and the cost of the plant. Now I may be misquoting you, but that was my understanding. I wish to ask you in that connection whether or not you believe it would be possible to construct a plant similar to this one without an exhaustive amount of preliminary work.

A. Well, I know of the construction of a great many water plants where the work included under that heading was practically negligible, and I did not see that the conditions here would necessitate the expenditure of nearly $15,000 before the determination of the question of whether the project would go ahead or not.

Q. Well, do you think it would be sound business judgment to invest almost $400,000 into a water plant without a thorough preliminary examination in regard to the quality of the water, the amount of difficulties that would be encountered in excavation, the purity and source of supply of the springs, and so forth?

401 A. Well, the cost of determination of the purity of the waters would be covered by $100, easily, by having analyses made of samples from them. I assume that it was common local knowledge that those springs existed up there at a high elevation above the city, and that a running of a line of levels from the city to those springs would establish the advisability of a direct gravity supply.

Q. I understand the reproduction-new-less-depreciation theory of arriving at value to mean the reconstruction as of today of the plant and the reconstruction today of the plant in question.

A. Yes, sir.

Q. Taking into consideration the fact that the present supply has proved inadequate, wouldn't this investigation cover all the available sources of supply, their analyses, and the amount for which they could be furnished, the cost of furnishing them, and so forth?

A. I do believe that the unknown conditions would have to be—should be investigated by any prudent investor; but I don't believe that an expenditure of $14,000, nearly $15,000, would be necessary to establish the prudence or the advisability of building an adequate water works and furnishing an adequate supply in a city this size and under the conditions existing here.

Q. Well, I don't understand the $15,000 of Mr. Alvord to include only engineering. That includes legal work too, and I will come to the legal phase of it in a minute. I am speaking now only

402 of the engineering operation which it would be necessary to go into before this plant could be instituted on the present scale.

A. Well, that item of mine doesn't contemplate very much legal expense; and it might be that I have made no adequate allowance for the legal expense included there. It didn't contemplate very much legal work of a preliminary nature before the project was started.

Q. Well, wasn't your estimate of $1,000 based on what it actually did cost?

A. No; I have no knowledge of what it actually did cost.

Q. And you still believe that this plant could be—all the preliminary work and engineering could be done for $1,000 to create a plant of the present size in the town of Bluefield?

A. Yes, sir.

Q. Mr. Miller, in those items which we stipulated before the commencing of this hearing, before we accepted the inventory, the total amount of the value of those differences would not be a great amount? Most of it is excavation and so forth, isn't it?

A. There is a considerable amount in that rock excavation at the Ada pumping station. I have not made any summary of the differences involved by those discrepancies.

Q. Can you approximate the difference in those items contained in that stipulation? Just roughly.

A. Oh, I think perhaps $3,000 might cover it nearly.

Q. You mean the difference in the value set by Mr. Alvord
403 and yourself on those items would amount to about $3,000?

A. Yes.

Q. Mr. Miller, in your report on the valuation, you excluded absolutely spring tract No. 20 in your estimation of present value?

A. Yes.

Q. Do you feel that that spring tract was purchased in the exercise of any bad faith?

A. No.

Q. Was it in violation of ordinary human discretion to have purchased this spring at the time it was purchased?

A. No.

Q. Well, Mr. Miller, taking into consideration the theory that we were reproducing this plant as of today, would it not be possible that in producing such a plant similar mistakes would be made at the present time in buying water rights which would be developed in the course of twenty years?

A. No. I think some mistakes are likely to be made in any case.

Q. Then, since we are taking the cost to reproduce the plant at the present time such as we now have, why is it that you exclude absolutely from your valuations purchases that were made in good faith in the past, which only later developments prove to have been worthless?

A. I have included those items in my cost of reproduction new, but they have depreciated to no present use or value in connection with the service.

Q. Then in fixing values for rate making purposes, if you
404 include depreciations of that nature, should you not include appreciations?

A. Yes, and I think I have.

Q. Then the proper way to arrive at the value would be to exclude depreciations and include appreciations.

A. No; I have included both.

Q. Then in depreciating entirely that spring you charge us with knowledge as of the date of the purchase which has been acquired by this company by its operation of this plant through long years of service?

A. What was that?

(Question read.)

A. I don't see that I do.

Q. Well, this spring was valuable at the time it was purchased, and was afterwards rendered invaluable by the city discharging sewage in its immediate vicinity?

A. Not spring No. 20.

Q. Which spring is it that is contaminated?

A. 22.

Q. Well, the same reason applies to both springs being depreciated, that they are both useless to the plant at present?

A. Yes, but the causes differ in the two cases.

Q. Then you would not depreciate 22 entirely in arriving at your value of the present plant?

A. I did do so because I believed the spring was not used or useful—not fit for use.

405 Q. Isn't there a possibility in the future of this spring becoming useful by the city arriving at some other method of disposing of their sewage?

A. Well, I haven't gone into the causes of pollution of that spring enough to know whether there is a possibility of its future use or not.

Q. Well, assuming that the city of Bluefield had polluted this spring by discharging sewage in that vicinity, would you still depreciate it?

A. I would consider it neither used nor useful until it was proved that its waters were pure; knowing that it had been condemned, I would consider it condemned for all time until proved that pollution had ceased to exist.

Q. Even when you take into consideration the fact that this spring was valuable at the time it was purchased, and was only rendered worthless by the act of the city, who are at this time contesting the application for raise of rates. Do you still feel that it should be depreciated?

A. Yes, as it is neither used nor useful, I don't see that it should be included in the value of the property used and useful.

Q. Then in what way would you recompense the company for the pollution of this spring?

A. Well, I don't know how—there might be different ways in which the company could be recompensed for that. If the city was liable—if the city was responsible for the pollution, I presume

406 it is responsible for damages.

Q. Mr. Miller, I believe you have depreciated entirely, or

to a great extent, the 99.36 acres of land upon which the old reservoir and dam for the impounding of the water from Ada springs was built. Is that correct?

A. Yes, sir. Yes, because I didn't see that it was used or useful in furnishing the services.

Q. If a filter plant was erected there for the filtration of water, and that dam and reservoir were placed in operation, wouldn't they be of value to the company?

A. It would then, of course.

Q. Well, then, hasn't this tract of land a potential value to the company?

A. It has, in the sense of—assuming that some future improvement may be made, and that difference made in the service, filtering water, adding to the supply. When those other improvements are made this will have a necessary part in that added value.

Q. Well, isn't the Ada spring itself located on this 99.36 acres?

A. I didn't so understand it. If it is then there is a portion of this land that should be included.

Q. Assuming, then, that the Ada spring is located on this tract of land, how would you change your estimate of the value of this 99.36 acres?

A. The map of the system indicated to me that the Ada
407 springs was not on that 99.36 acres, but the 99.36 acres was below, down stream, from the spring tract, and the—— Well, I have an item of spring tract No. 21, which is the Ada spring, which is separate from that 99.36 acres, a special parcel of land entered as spring tract No. 21 in the inventory.

Commissioner Northcott:

Q. What is the amount of land included under the Ada spring?

A. Spring tract No. 21, whatever its acreage is. There is two acres entered in the inventory for spring tract No. 21.

Judge Ritz:

Q. That is in Mr. Alvord's inventory?

A. Yes, sir; which is separate from that 99.36 acres.

Judge Sanders:

Q. Now then, assuming, Mr. Miller, that this spring is on the 99 acres, what portion of that 99 acres do you think that the company was justifiable in acquiring with this spring, and what would be the value of that portion of this tract?

A. I could not, with my present knowledge of the exact situation there, attempt to say just exactly how many acres of that 99.36 would be entitled to be considered as belonging to that spring. Most of the springs have only an acre to two acres in connection with them; and I should suppose that some such amount, possibly a little more, in this case, really belong in the used and useful property.

Q. Well, I believe you depreciated this tract of land?

A. Yes, I did not consider it used and useful.

Q. Now, as I say, assuming that this spring is on that
408 tract, in what way would that affect your figures on the depreciation?

A. It would restore a portion of that value which I have -liminated.

Q. Well, how much would that be? Can you give us the quantity of it, and the value?

A. The whole amount that I have included here for the 99.36 acres is $2,600, as cost of reproduction new. I don't consider that more than 5 per cent of the acreage would be likely to be necessary, although I couldn't say positively.

Judge Ritz: Might I ask a question right there?

Q. Mr. Miller, if the spring is on the 99-acre tract, what would become, then, of the item of $1,000 that you have allowed for the spring as being on another tract?

A. Well, if that was unnecessary for the protection of the spring against pollution, it would go out.

Q. Well, suppose it was necessary—the two-acre tract was necessary to protect the spring against pollution, would it be worth $1,000 if the spring wasn't on it?

A. I should think that that would merely have a land—an ordinary land value there.

Mr. Fox:

Q. Well, Mr. Miller, suppose that this 99.36 acres has a potential value to the company, should the company have credit for it in this valuation?

A. I don't believe that in order to do justice to the company that the city of Bluefield should pay rates on that value. The
409 company has an investment there, which it may succeed in getting out of it by sale of the property or such part of it as is not useful in the water works service.

Q. Then, in other words, Mr. Miller, if the company should believe that a piece of land would in the future be very valuable to them in furnishing water to the city, but which at the present time is not useful, they would not receive any credit for that value for rate making purposes until it had developed into a part of the plant? Is that correct?

A. I think that is the principle that has been followed by judicial bodies charged with rate-making powers.

Q. Assuming that the Henry Bailey farm could not be bought except as a whole, was the purchase of this farm a judicious expenditure, in your opinion?

A. Yes, but it does not follow from that that the entire value of the whole acreage is necessary to the service. The company might at any time dispose of any unneeded portions and get the cash out of it.

Q. They have not yet done so, have they?

A. Not to my knowledge.

Q. Do you know whether they have had an opportunity or doing so?

A. No, I do not.

Q. And since it was impossible to buy land to protect the spring without getting the whole farm, shouldn't that be included in the value of the water works when it is used for the protection
410 of the spring?

A. I don't believe that necessarily follows, because that might lead to absurdities, just as the application of the theory of cost-of-reproduction sometimes leads to absurdities, if strictly followed.

Q. Mr. Miller, I believe you stated that the greatest distance any material was carried in the construction of spring houses and basins around the springs was a thousand feet. Is that direct, or as the material was actually carried?

A. It is, as stated in the inventory.

Q. How is it stated in the inventory?

A. I have copied into my report, on page 11-*a*, the data given about the various springs, including statements of distances which the material was carried; and the spring where the material was said to have been carried a thousand feet was spring No. 2.

Judge Ritz:

Q. Whose inventory do you refer to?

A. Mr. Alvord's inventory. The statement appears on page 24 of the inventory, Mr. Alvord's inventory. All material had to be carried approximately a thousand feet up the mountain side.

Judge Sanders:

Q. The reason I asked you that question was yesterday Mr. Alvord or Mr. McCarthy stated that this material in some instances was carried a great deal further than this. I wish to arrive at what distance you took, whether it was a direct distance, as a bird flies, or
411 whether it was a distance as a man would walk going up the mountain.

A. I also made the statement that I had personally visited all of these springs and had looked over the statements in Mr. Alvord's inventory made in reference to them, and sized up for myself the correctness of these statements, including these statements of distance which material would have to be carried. In other words, I sized up the distances from the spring to which material might be hauled by wagon and estimated the remainder of the distance for which material would have to be carried.

Q. Mr. Miller, in reconstruction of a plant similar to this, would not the purchase of a Wyman pump be necessary?

A. Not necessarily a Wyman.

Q. Or a similar pump?

A. You might have to have some kind of a pump of that description, yes; and if it could be disposed of afterwards it could be done and the money gotten out of it.

Q. That was a necessary purchase in the construction of this plant, though, wasn't it?

A. I think so, but my information is that it hasn't been used in several years. It is not connected up with anything.

Q. Mr. Miller, under the decision of the Commission that was referred to yesterday, do you change your idea of value in regard to the service cocks which were originally put in at the cost of the consumer? That decision was that those are the property of the company, and that the cost of putting in was a fee charged by
412 the company to the consumer—service pipes?

A. No; I don't believe that there is any equity in compelling people to pay interest to others on investments of their own; and I believe, as the Supreme Court of Wisconsin stated in the case of Appleton Water Works company against the Railroad Commission, that what would cost nothing to reproduce under ordinary business methods is not to be necessarily included in an estimate of cost of reproduction. I thought I had a copy of that opinion here. And in that case, the question of service pipes paid for by consumers was in question, and the Supreme Court of Wisconsin upheld the Commission in excluding that item.

Q. It wouldn't be possible, would it, Mr. Miller, to reconstruct the present plant in Bluefield as of today without cutting through the pavements?

A. Oh, no; no, it would not; but the United States Supreme Court and a number of other legal authorities have held that that is not an element of value in rate making cases; so I didn't take the time to figure out what that element of value was.

Q. Well, leaving out of your consideration the decision of the Supreme Court, as a practical engineer do you believe that that should be considered in the cost of reproduction?

A. The property could not be reproduced exactly as it stands without cutting through the pavements overlying those pipe
413 lines; that is a fact; and the cost of cutting through and replacing those pavements would strictly be a part of the cost of reproduction; but, as explained in my report, my estimate contemplates the assumption—not only the assumption that there is no plant here and we are going to build one, but the assumption of the physical conditions which existed at the time the various parts of the property were put in. Would you care to have me read what I have?

(Reading:) "Cost of reproduction must mean the cost which will be necessarily incurred by a reasonably prudent and careful man, using ordinary, careful business methods, in reproducing a plant of equal efficiency. Anything which under the conduct of such a business would cost nothing to reproduce cannot logically be included. It is not denied that if the city or a new water company were to establish a new plant, the consumers could be required, as a condition of receiving water service, to do the work in question, and even furnish the pipe. Such a requirement is quite generally enforced at the present time in cities of this class. Conditions of life at the present time in such cities practically compel residents to accept water

service. Even in small cities the old fashioned well is either tabooed by public opinion or its use prohibited by health regulations. So it seems that there would be no question, but that it would be entirely practicable, and in fact the only reasonably prudent policy
414 for a new company to require consumers to lay their own service pipes."

Q. Mr. Miller, from your knowledge of the company's property, gathered from the inventory and your own personal examination of it and from your knowledge of the construction of the water works and from the information which you have been able to gather on the subject, what, in your opinion, was the cost of the applicant's water works?

A. I don't know what it was. I haven't a compilation of the costs. I have the costs of some features, and have had to estimate some other data on the cost of reproduction of other parts.

Q. I am only asking you for an opinion on that subject, not from any positive information.

Judge Ritz:

Q. Do you mean what it cost the company to build it at the time it was built?

Judge Sanders: What I mean is what the company has actually put into this plant as a plant; not in the operating expenses or repairs, but what they actually put into it as the proper primary cost of it.

A. Well, I couldn't do more than guess, and I wouldn't care to put any figures on the record that would be interpreted as being anything more than a guess, based upon insufficient knowledge. I have my records of the cost of reproduction and reproduction less depreciation; and beyond that I have no information to connect
415 that—to establish any relation between that figure and the actual total cost from beginning to end.

Judge Sanders:

Q. You have examined this inventory which was made by Mr. Luce, and you have also made a personal inspection of the property of the company. The inventory it is agreed is a correct inventory of the company's property, with the few exceptions noted in the stipulation. Couldn't you give us some estimate as to what you think this property cost the company?

A. I believe the cost would probably be less than I have figured as the cost of reproduction new.

Q. You think it would be less?

A. Because on many items I know that my allowance here is greater than the original cost.

Q. Well, I understand that, but I wanted to get your idea about that, if you could give me some idea about it. You figured on this as a reproduction proposition. Of course, in order to do that, you necessarily had to know what property was here. Now, knowing

what property is here, couldn't you give me some figures as to the cost of it?

A. No, I could not.

Q. It wouldn't be a material difference, however, between that and the figure that you have given that it would cost to reproduce it one way or the other?

A. There might be considerable difference.

Q. Well, why is it that you can give us the cost of the
416 reproduction of this plant and can't give us an approximation of the cost of the plant itself?

A. Because I don't know all of the original conditions under which the plant was built. I don't know how the history of wages of labor here throughout the time that this plant has been developed. I am informed that a great deal of it has been built through a period of more than ten years ago, when labor was getting considerably less than it is now.

Q. Well, assuming, then, that the cost of labor when this plant was constructed and when the property in connection with it—all the property in connection with it was acquired, and including all materials that went into it was the same that it is now, what would you say that it cost the company?

A. Oh, if the rates, *or* course, had always been the same as they are now, the cost would be, I think, substantially what I have estimated.

Q. The cost of the company would be what you have estimated to be the cost of reproduction?

A. Yes.

Q. Now, I believe you have stated, and it so appears in your report, that the cost of reproduction new is $412,991?

A. Yes.

Q. And that the cost of reproduction new less depreciation is $383,112?

A. Yes, sir.

Q. And that is subject to the corrections which you have already made?

A. Yes, sir.

417 Q. Will you please, then, give me the amount of the corrections which you have already spoken with reference to and then when you have made these corrections give me the aggregate amount of the cost of reproduction less depreciation?

Judge Ritz: I can give you the ones he has already given. $2,808, $277, and $1,600; $4,685, those amount to. That doesn't include the addition he is going to make for service pipes.

Judge Sanders:

Q. The corrections, then, so far that you have made amount to $4,685, and that amount doesn't include the correction that you propose to make in regard to the service pipes installed by the company?

A. No, nor does it include the proportion of the amount of overhead expenses.

Q. Now, then, these two items that you included, you will please furnish them to the stenographer and let him put it into the record.
A. Yes, sir.

Judge Ritz:

Q. What is that, the proportion of the amount of overhead expenses?
A. That is those items of engineering and superintendence and so forth which is ordinarily referred to as overhead.
Q. What you mean is, it is the percentage on these items of corrections?
Commissioner Northcott: On these corrections.

Judge Sanders:

418 Q. Then I will ask you this question, after you have furnished all of the corrections which you propose to make, including the ones which you have already made, you will please give us the total amount of reproduction new less depreciation.
A. Yes, sir.

Mr. Fox:

Q. Mr. Miller, we very frankly admit that we forgot to put a couple of things in our inventory, and the two things are the railroad siding at Ada and a water map in the office down here; and in making your comparison with the inventory, if you happen to notice those two discrepancies, I would like for you to place a value on them as near as you can at the present time.
A. I don't know about the map. I do know about the siding. I meant to make note of it; I knew that at the time I was going over the property. I meant to include it in the valuation. I called Mr. McCarthy's attention to it today. I didn't include it because it had slipped my mind. I hadn't made a written note of it, and my mental note of it had left me. It is customary for railroad companies to charge the user for the cost of installing a siding, and while the siding does not remain the property of the user, it is an expense to him. It was quite probably an expense to this company to get that siding—cash outlay—and ought to be included. As I said, I meant to include it. I don't know the exact length of it, the weight of the rails, or the amount of grading that was
419 necessary there; but Mr. McCarthy tells me that there is just space for two cars in the clear of the main track. I should think that ought to fairly represent a cost of between four and five hundred dollars, probably.
Q. Can you place a value on the water map?
A. No, I don't know—I don't know anything about that water map. Is that a wall map?
Mr. McCarthy: No, it is a folio; it is an atlas.
The Witness: One of these insurance atlases, 50 foot scale to the inch?

Mr. McCarthy: No. About fifty pages in it.
The Witness: The pipe lines all entered into it?
Mr. McCarthy: Yes.
The Witness: Covers only the city; not the entire system?
Mr. McCarthy: No, the entire system.
The Witness: Your spring pipes and all?
Mr. McCarthy: Our spring pipes and all. Then a map showing just the mains alone.
The Witness: Well, I don't know about that. My impression is those books cost $25 apiece, isn't it?
Mr. McCarthy: Well, I couldn't say what these covers cost.
The Witness: The maps are printed and bound?
Mr. McCarthy: Yes.
The Witness: I am familiar with those insurance atlases, with 50-foot scale. I don't know how many pages this has, or how much drafting would be done but there would be the cost of the books and the cost of the drafting, anyway. The drafting involved
420 in showing the pipe lines and other properties of the company. I don't know; I haven't seen those atlases. But I should presume that would represent at least $100, if the books cost $25, and that is only my vague recollection of figures that I haven't seen for quite a while—some years.

Judge Sanders:

Q. If it cost the company $2,500, you wouldn't say that would be too much, would you, not having made an examination of it?
A. Oh, if it cost that I presume it is a fair price. It doesn't seem to me it ought to be much more than $100, unless my recollection as to the purchase price of the printed books is very much in error.
Mr. Fox: That is all.

Commissioner Northcott:

Q. Mr. Miller, I want to ask you a question, please. What, in your opinion, is the true measure of value of the property used in the public service for rate-making purposes?
A. I don't believe that there is only one measure of value? I believe that if the original cost can be ascertained, and if the property is not of very ancient origin, that evidence is of value in determining the value of the property today. Many times, however, that evidence is not available, and reproduction cost estimates are the only measure of value applicable; but they are also mere evidences of value—these estimates of reprduction cost less depreciation, I mean, are mere evidences of value, and they are many times the only evidence available.
Q. Would you take into consideration, in fixing the value for rate making purposes, the earning capacity of the property under normal conditions?
A. Yes, the value of the service to the users of the service must be taken into account.
Q. If the town of Bluefield should fall upon hard times, and in the course of a few years become reduced to a city of the population

of 2,500 or 3,000 people, the reproduction new value of this plant less depreciation would not be much of a criterion, would it?

A. Not at all. I have known cases of that kind. The Ashland case, in Wisconsin, is a notable example of a city that suffered a decline in the population and the general business conditions. The water works there represents the highest per capita valuation of any plant in the state, about double the average per capita valuation, and is far more than adequate for the city as it is today, or as it has been for several years; and the company—that water works—has been before the Wisconsin commission three times in rate cases, and is now—the company has recently applied to the commission again, making a fourth appearance for a review of its rates. The last order of the commission was on a re-hearing of a previous order, in which
422 the commission granted a very substantial increase in the fire protection charge, and fixed rates which still yielded the company less than 6 per cent return on a conservative valuation of the property; and upon this re-hearing and the showing and pleadings made by the city of the hard times being suffered up there—they had suffered for several years—the commission lowered the fire protection service charge and I think the domestic service rates, so as to make still less than was allowed under the previous order, which was then less than 6 per cent net return.

Q. Then, in your opinion, there are a number of things which should be given weight in determining the rate-making value of a public utility plant?

A. Yes, sir.

Q. In your opinion, Mr. Miller, should there be, or could there be, two values, one for rate-making purposes, say, and the other for taxation purposes?

A. Well, that will depend, I think, perhaps on the laws in some states, or the custom in regard to taxation. I don't believe that the utility should be taxed on 100 per cent of its value when other property is taxed upon a lesser proportion.

Q. Predicating your opinion upon a law which says that all property shall be taxed at its fair and actual value, could there, or should there, be two values, one for taxation and one for rate-making purposes?

A. Theoretically, there should not, but practically, I think, there should, for this reason, that a law of that kind, like a lot of
423 other laws, is more or less of a dead letter. The assessors do not usually, at least in Wisconsin, get property on the assessment books at full value, although we have a law in Wisconsin which says that the property shall be assessed at full value; and the tax commission in our state has for a number of years gathered statistics in every assessment district as to the proportion of real value which is shown by the tax rolls, and those ratios did, a few years ago, range down to 50 per cent in some assessment districts, and the tax authorities have been quite energetic in pressing the assessors in those districts particularly to get those ratios raised. There is the law which prescribes the property shall be assessed at full value,

but it is not; it is not done; and where other property is assessed at less than 100 per cent I think utilities should be treated alike.

Commissioner Northcott: That is all.

(Witness stands aside.)

The respondent, the city of bluefield, here rested its case.

Thereupon, the applicant, to further maintain the issues on its behalf, introduced the following evidence in rebuttal, to wit:

424 WILLIAM MCCARTHY, recalled, tetified as follows:

Direct examination:

Mr. Fox:

Q. Mr. McCarthy, I would like for you to show what the value of that siding—railroad siding at Ada—which was omitted from the inventory of Mr. Alvord, and also the water map which was omitted from the inventory—what the value of those two things is.

A. I haven't had an opportunity to value this siding, and I don't know the exact length of it. Mr. Miller very kindly called my attention to it at noon today, or the matter wouldn't have come up. I assume, as the siding will hold two cars, that it will be eighty feet long from the clearance point to the end. It would no doubt be forty feet from the clearance point to the point of the frog, and about eighty feet from the point of the frog to the point of the switch. This would make an even 200 feet, and I would estimate the value of the siding at about $2 a foot, making $400.

Q. Please state the value of the water map now as near as you can.

A. I couldn't state exactly the cost of the water map. It cost us more than what it is actually worth now, but I would place its present worth at $2,500.

Cross-examination.

Judge Ritz:

Q. Mr. McCarthy, this siding that you say is worth $400 was put in by the water company on the railroad company's
425 right of way and at the expense of the water company. That is true, isn't it?

A. Yes, sir, that is true.

Q. And it belongs to the railroad company, doesn't it?

A. Well, I suppose it belongs to the railroad company; under the rulings of the Interstate Commerce Commission, perhaps by our laws, but we feel a personal interest in the matter, inasmuch as we paid for it.

Q. As a matter of fact, your contract with the railroad company

provides that it is the property of the railroad company after you put it in there?

A. I don't know, I am sure. I have read the contract, I believe. I don't know whether that contract carries that stipulation or not. I was with the railroad company when that contract was adopted, and it occurs to me that it was possibly after this date that that clause in the contract was included.

Q. Well, wasn't that clause in the contract of the company used 26 years ago?

A. Not that I know of. I can recall many of the contracts, all right, and have put in many sidings under them, but I don't recall——

Commissioner Northcott: Well, gentlemen, isn't it immaterial, for the purposes of this case?

Judge Ritz: Yes, that is not what I am getting at at all.

Q. Mr. McCarthy, I wish you would state why, if the water company should be credited in its assets or in the value of its plant with this siding that was put in at its expense on the rail-
426 road company's right of way, it should also be credited in the value of its plant with these services pipes which were put in by other people at the expense of other people. What reason have you for giving the water company credit for both of these things?

A. Well, I believe, under the reproduction method, a matter that is useful to the conduct of the company's business is included, and that certainly would be one item of it.

Q. Didn't you on yesterday state that the reason you included these service pipes in the value of the company's plant was because in building a railroad these sidings that are built by other people become part of the railroad company's property?

A. I said so.

Q. And taking a like reasoning, that then those service pipes ought to become a part of the water company's property? Is that so?

A. Yes, sir.

Q. As a matter of fact, this siding, taking your reasoning, is not a part of the water company's plant at all, is it?

A. Legally, I suppose, it is not. However, the water company has got the $400 in it.

Q. And it hasn't got these several thousand dollars in the services, has it?

A. That is true.

Q. Now, about this water map, who made this water map?

A. This map was made by a man named William H. Ford, a civil engineer in Philadelphia.

427 Q. He was an employe of the company, was he?

A. Yes, sir.

Q. And paid a regular salary?

A. No, sir, I think not.

Q. He wasn't one of the regular employes that was employed by

the company and paid a regular salary out of the expenses of the company?

A. No, sir.

Q. Is this map charged in the plant or in the items of expense?

A. I don't know how it is charged in the items of expense connected with the company. I suppose it is charged to the map as a part of the water works system.

Judge Ritz: That is all.

Redirect examination:

Mr. Fox:

Q. Mr. McCarthy, the expenditure for this siding was a necessary expenditure of the water company, and was so paid for by it, was it?

A. It was.

Judge Sanders:

Q. And would have to be provided for in the reproduction of the plant?

A. It would.

Q. Mr. McCarthy, you heard the evidence of Mr. Triol, who testified in this case, did you?

A. I did.

Q. And you heard him give the operating expenses of the company for quite a number of years? You heard his evidence in that respect?

A. Yes, I heard it. I don't know that I can recall what the figures were.

Q. Well, I don't ask you to recall, but I will ask you to state whether the items of expense referred to by him were reason-
428 able and necessary items of expense of the company.

A. Yes, sir, they are reasonable items.

Commissioner Northcott:

Q. Mr. McCarthy, when did you come with the company?

A. I came with the company in 1903.

Q. Were the duties of the president then about the same as they are now?

A. So far as I know; yes.

Q. There has been no change, so far as you know, in his duties or the work performed by him for the company?

A. No change that I know of.

Q. When was it he began to be paid a salary?

A. Well, I suppose he was always paid a salary. However, I don't know anything about that.

Q. You heard Mr. Triol's evidence yesterday?

A. Yes.

Q. Did you notice the expenses for the home office salaries in-

creased along about 1913, and ran up to about $4,800 from a much smaller sum?

A. Yes.

Q. What was the cause of that increase?

A. I couldn't say, I am sure.

Q. Do you know of any increase in duties performed in the home office that would justify that?

A. Well, I can't say about that.

Q. I say, do you know of any?

A. No, I don't know what would justify it.

(Witness stands aside.)

429 JOHN W. ALVORD, recalled on behalf of the applicant, testified a follows:

Direct examination:

Mr. Fox:

Q. Mr. Alvord, yesterday in the cross-examination of Mr. McCarthy the question was asked whether or not you had miscalculated the station economy at the plant at Ada in comparison with the rest of your new plant at Bluestone. I would like for you to explain that.

A. The testimony appeared to show that our analysis of the value of the springs was based on incorrect determination of the station economy at Ada, and I don't believe that that is quite true, and would explain that the analysis is a relative one, the same station economy being adopted at the Bluestone plant that is adopted at the Ada plant, and the differences only being used; and in this connection I think it might be well to note that the cost of water per million gallons is not here the whole cost of the water, because items which were common to both plants were omitted for convenience.

A further explanation is probably due, due to the fact that the report itself is not—is not possibly as clear as it might have been made, owing to a misprint. "The cost of pumping at the present plant (comma) at Ada (period)" is intended not only to represent the cost of pumping at the Ada plant itself, but also the supplementary pumping that has been done all during the dry
430 weather from the Beaver Falls, and this has been consolidated into the station duty at Ada so as to represent the combined pumping efficiency at those two plants. My first figures separated these two, and then I thought for simplicity I would combine them, and some of the printing was not changed so as to make that as clear as it might have been, and I don't wonder that it led to some misconceptions. Now, the real effect, [illegible], is not as would have been represented by the cross-examination of Mr. McCarthy.

I would like to further supplement that analysis by some other figures and reasoning which are not included in this analysis. Possibly I was too anxious to make it brief and short, and thereby sacrificed to some extent its effectiveness; but I have computed the cost

of water based on the station economy of each station by itself, from each of the four sources, including the proposed Bluestone supply, and including all items such as stations, supplies, maintenance, repairs, and salaries, which in the two cases in the analysis were common; and I have based these on the minimum flow in each case. As soon as we have the average flow it must be remembered that the springs will supplement the pumping and reduce the economy, and therefore the gravity springs and the higher supplies, the supplies that are pumped less, increase in value. Therefore, this is the most rigid, conservative position which can be possibly taken. The
431 gravity springs, for instance, including all of the interest, depreciation, operating, and maintenance, cost per million gallons, delivered into the tank, only $20.30. The Ada springs taken alone now, and based on the minimum quantity pumped, of 430,000 gallons a day, and including all of the station salaries, depreciation, maintenance, interest on the investment of the plant and pipe line up to the tanks, cost per million gallons, $127. The Beaver Pond station, as near as I can get at it—I haven't as accurate data on that, from the short time I had, as I had on the others, but I think I am approximately correct—taken in the same way, from the old station, cost $92 per million gallons; while the proposed Bluestone supply, taken on my estimates and on the basis that 2,000,000 gallons a day is delivered, would cost $41.15 per million gallons. Therefore, taken in this way, it would be shown that the gravity springs supply water at at least half the cost per million gallons which the proposed Bluestone supply would supply them, which is the next nearest source of supply. Now, all of this is based on the minimum flow. If we had the data—which we haven't got, unfortunately—to show the amount of flow used and useful during the year, the value of the gravity springs would be very much enhanced, unquestionably. We have taken here the time when the gravity springs flow the least and therefore are at their period of least value.

Now, I have summarized that by four conclusions in which
432 I have summarized all of these considerations which induced me to adopt the sum of $50,000 for all the springs, as follows:

First. The Bluestone supply, as proposed, is not an unlimited supply; it cannot be developed greater than the amount we fix in advance for the project, because we must determine the cost involved in our impounding reservoir based on the amount of water which we will produce; if we develop 2,000,000 by an impounding reservoir sufficient for that purpose, then we will only have 2,000,000 gallons. We can't increase that supply without greatly increasing our investment.

Second. The springs have been measured in terms of the next nearest supply at the time of their least flow. If we could measure their average useful flow we would find greater value established for the gravity springs.

Third. It would be impossible to repurchase the springs for any reasonable value at this time, owing to the general impression that they have unlimited value. I presume, if the commission desired to

be convinced of that fact, that the company could produce any number of witnesses who would express views on that line.

Fourth. On any measure, the gravity springs have an advantage. Their total cost per million gallons delivered is half that of the next most available supply.

I really think that all of those thinks influenced me to fix
433 that value. I feel quite sure that those springs have an excess value over their cost of development; and I susually test out a conviction of that kind by changing places in my mind with myself and considering if the city would be willing to take this plant without those springs—leave the company the springs and their development —and have it look elsewhere for its supply, I am quite sure, under those circumstances, the city would be willing to pay at least $40,000 or $50,000 plus the development of the springs to have the plant remain intact as it is.

Q. Mr. Alvord, you have heard Mr. Miller's explanation of the differences in estimates. I wish you would please explain what you consider the fundamental difference in the values arrived at between you two. What was the fundamental reason of the difference in the values?

A. "I listened with a great deal of interest to Mr. Miller's exposition of his methods and researches this morning; and I fully recognize Mr. Miller's great conscientiousness in those matters; but I was struck with the fact that he approaches the subject fundamentally differently from what I do, and that that fundamental difference really accounts for the very larger part of our different conclusions as to reproduction cost. Mr. Miller seems always to me— and I am sure that he won't mind this friendly exposition—to be seeking the cost under past conditions and the past cost, and
434 then applying that to reproduction cost at the present time, rather than facing the present problem at the first part of his investigation; and he, I think unconsciously to himself, slips from past cost into rebuilding cost, and then from rebuilding cost back into past cost, without really realizing that he does so. Take, for instance, his analysis of the cost of pipe laying. He immediately seeks the cost that the company has incurred under past conditions, under piece meal conditions, as his first line of investigation; and, failing in that, he seeks other piece-meal and past conditions, and then he applies that to what he calls reproduction cost. I would differ in that matter, by confirming at once what would happen in this city were I to rebuild this whole distribution system in one season. Now, I wouldn't think about the past cost at first at all, unless I failed to find what I considered reasons for determining the cost under a totally new procedure. In the first place, under that condition my pipe would come in by carload lots and I would gain probably some on the purchase of the materials In the second place, I would undoubtedly corner the labor market here for expert water works construction labor, and we would have to import labor, and we would have probably to pay more for labor, and we would have probably inefficient labor; and as I conceive it, we would pay a larger sum per

unit to push that all through and get it completed in one sea-
435 son than has been the case with the actual cost of this plant, etc."; and my estimates, frankly, are higher—I believe them to be higher; they are intended to be higher—for that reason than the actual unit costs in laying pipe here in the recent past with a small gang of well trained company employes, thoroughly familiar with their work, and operating at the best season of the year and the best weather that they can pick, and with all the advantages of long familiarity. That tendency of mind is not uncommon, and it has been one of the common ways in which commission staffs have been trained, and from it arises this very mix-up on the paving question. Easily and naturally the mind slips back to the past, without realizing we are confronting the future, and logically and strictly must account only for the future in this rebuilding, and we come up against this paving proposition. Mr. Miller frankly and honestly says that we can't reproduce the plant without cutting through the pavements, but when he comes to argue he goes back to past cost. The cutting through pavements is undoubtedly an unearned increment and appreciation—something that has come to this company by reason of the fact that the town has improved—but we have no right to cut that out unless we cut out depreciations. If we are going to talk about depreciations on one side and not the appreciations on the other, then we are not telling the whole story; and just the minute

that your mind slips back into past cost and past conditions,
436 you are cutting out appreciations, unconsciously largely to yourself. And it is those very appreciations that we ought to have on the one hand, if we frankly and thoroughly deduct the depreciations on the other. Sometimes they balance one way; sometimes they balance the other way. I have known cases where the cost of pipe in the past had been so great that it greatly offset the cutting through pavements, and yet the commission cut out the cutting of pavements and neglected to consider that the past cost of the pipe should be considered too if they went back into the past at all; and my theory—my whole argument—is that the past cost is an investigation by itself, and that when we are reproducing your mind should not be permitted to slip back into past conditions at all, because then we do the plant an injustice by cutting out appreciations which should be all included, if we are going to deduct depreciations.

I trust that what I say will be taken in good part; I am sure it is meant to be kindly, and merely my point of view—my opinion—and a fundamental principle for which I am struggling these days very hard, because I think I see there the ruts of a great deal of confusion and great deal of trouble; that half of our trouble—half of our confusion—in this appraisal matter would be eliminated if everyone should see distinctly that when we are dealing with

reproduction cost we should deal with the present and the
437 future, and when we are dealing with past cost we have entirely a different line of reasoning and logic to govern us.

Q. Then, Mr. Alvord, do you believe that service pipes should be included in the valuation as appreciation?

A. No, not under all circumstances. When I come to the ques-

tion of services I reason just as I would reason with reference to that question of the siding. I think the logic is just the same; I am rather glad to illustrate it just that way. With reproduction strictly of this plant, we would have to face the cost of again paying the railroad company to build that siding on their property to become their own property. That is, taking it for granted that the usual procedure governs, that would become a legitimate part of the cost, and should be added to our reproduction.

Now, take the question of services, if we have no law or regulation now requiring the company to build all of the services, we could, on a reproduction, just as legitimately conclude that we can raise from the consumer whatever fee or whatever payment he has been accustomed to making on those services as a deduction from our reproduction cost, as has always happened; and where I find a large amount of services now—and I consider that the Knoxville decision re-uires me to include those as the property of the company, just as this siding is actually the property of the railroad company,
438 I still go ahead and I say on my reproduction I shall be able to get from the property owner a contribution to the cost of my property, which I will deduct from the full value of those services. Of course, that is complicated a little by existing law or rulings of the commission. If the ruling at the present time is that the company must build those services and must pay for them, then we must consider, I suppose, strictly on a reproduction, that we can't hope to make the property owner contribute. But I think that illustrates the duty of hanging to strict logic on this reproduction cost. You will always find, if you reason it out, that it will have sound reasoning that the reproduction will include all the appreciations frankly, and that when you tell the whole story, after getting all those appreciations, we will deduct all the depreciations, and we have got down fairly to the level of a reproduction measure, providing a reproduction measure is found, through all other tests, to be a good measure in the particular case in hand.

Mr. Fox: That is all.

Cross-examination.

Judge Ritz:

Q. Then, Mr. Alvord, in making these calculations you refuse to be taught anything by the facts of history?

A. When I am reproducing I make the past history a blank, and except so far as my experience and except so far as recent past costs throw light on present cost of reproduction; but I always go
439 through a historical investigation wherever I think it has any value or is desired, and from that historical cost nothing should be taken for depreciation unless you had appreciation. The same rule holds good there. I notice, for instance, that in the book cost presented here in Mr. Triol's evidence, that he has taken off depreciation from the book cost. He shouldn't take depreciation from the book cost unless he adds appreciation, because taking off

the depreciation is an endeavor to bring the past cost down to the present value, and you don't tell the whole story unless you take into account the appreciation as well as the depreciation.

Q. I understand that, but I understood from your argument—and it was a very good argument—that you didn't want to know anything about the past history of a plant when you came to fix the present value of it.

A. Why, I could come here today and not know a thing about this past history and make you a reproduction estimate of this plant.

Q. And you could do that a good deal better than if you had the past history?

A. No. The past history is always interesting, but it is not necessary, and it leads you into unconscious injustice sometimes, especially if your mind is not braced to the strict logic of a reproduction estimate.

Q. Don't you think if you wanted to reproduce a certain
440 structure, for instance, this building, that it would be of some service to you to know what it cost to construct it?

A. Why, certainly, if that is recent past cost; but an engineer's business is to build new things and know what new things will cost. That is what he is doing all the time. His whole life has been devoted to finding what it will cost to build something new under the conditions that are given.

Q. But this is to reconstruct something old.

A. But I am going to reconstruct it as though I were going to rebuild it all today.

Q. You are going to reconstruct a counterpart of what is here now?

A. Yes, sir.

Q. And notwithstanding that you are going to do that, you say it would be a detriment to know what it cost at first?

A. I don't say it would be a detriment. I say if my mind is not clear on the fundamental conception of what I am going to do, if I have that unconscious tendency to slip back into past cost at times when it appeals to me, it would be better if I didn't know what the past history had been.

Q. You would come nearer finding out what it would take to construct the house by not knowing what it cost?

A. Yes, with a man that really knows his business.

Q. And you believe that an architect would know better what it would take to construct the house before he builds it than after?

441 A. If you talk about architects, I drop out. Architects are not, as a class, held down as engineers are to their estimates.

Now, if you will permit me to say one more thing, I think I can make it perfectly clear. The tendency to estimate a plant under past conditions and at present day prices produces something which is practically a fairy tale—it is an illusion. We can't humanly

build works under past conditions at present day prices. If I could do such a thing as that I would be a millionaire; I would be in demand all over the country. That is what everybody would like to do, would be to build something under past conditions, under conditions that were easier than they are now; and when we unconsciously fall into the habit of estimating present prices from past conditions, we are doing something that is not humanly possible; it is an illusion; and we mustn't measure these utilities by illusions.

Q. You say architects are not reliable——

A. I never came across one that was——

Q. (Continuing:) And that their estimates on present costs are not to be relied upon. How about the contractor who bids on doing the work?

A. Contractors will vary a hundred per cent in their bidding.

Q. Then they are all unreliable except engineers?

A. I think engineers make more of a study and are more
442 reliable in their estimates, especially when they have spent a lifetime in one specialty, than either a contractor or an architect. That is why it is necessary to have long experience in these things. That is why you can't hope to get the results from these staffs of the commissions that you will get from men who have spent a life time just in doing that one thing.

Q. Now, I understand the sum of your evidence to be, Mr. Alvord, the only way to get an absolutely correct idea of what it would cost to do a thing is to have an engineer's estimate of the cost before it is even done, or before anything like it has ever been built?

A. That is what all business men do.

Q. And that that sort of an estimate is much more reliable as a basis of construction than the actual cost of a similar structure?

A. If it is made by an experienced man, yes. To illustrate that, the cost of a structure very often represents losses on the part of the contractor, especially incompetent contractors. Those losses are just as much a part of the cost of that property as the rest of its——

Q. Certainly; and when I say cost of it, I mean the actual money that went into it; not the money that was paid to the contractor at all.

A. Yes. If you have the actual cost of a property, and you have all of that cost. And the investigation of the past cost is just as much of a careful reasoning process as reproduction cost, es-
443 pecially recent cost.

Q. What do you mean by "recent cost"?

A. I mean done so close to the time of your valuation that there has been practically no change in the conditions or prices and labor and general conditions of the money market, and the like.

Q. Well, you mean a year or two years or three years?

A. Yes, in the case of a plant like this within five or six or seven years. If this plant had all been built within seven years, and we had an accurate book account of that whole transaction, and we had a careful analysis of the book account to see that none of the costs which were not repaid in cash were omitted from the book account, there could be no better evidence than that of the value of this plant

today, providing its cost, either reproduction or past, represented value.

Q. Then in so far as Mr. Miller has taken into reproduction past costs within the past seven years, he is not subject to criticism?

A. Well, no, sir.

Q. But when he goes back of seven years his testimony should be criticized?

A. Well, don't say exactly seven years; say comparatively recent cost.

Q. Yes, but it is hard for us to determine how far Mr. Miller is justified in going back unless you say what you mean by "comparatively recent cost."

A. Well, he must in his mind, as I have in mine, only use
444 that by analyzing whether there was any change in those conditions. In other words, he puts himself in precisely the state of mind that he would if he were engineer and charged by the Bluefield Water company with building this plant anew.

Q. Now, suppose we knew that a structure had been constructed ten years ago, and it could be shown that it was economically constructed, and there went into that structure $10,000; that at that time the rate for money was 6 per cent; that at that time the price for such labor as went into that construction was $6; that at that time the price of that material that went into that building was $5 for a unit; that today the price of money was six per cent; that today the price of such labor as would go into that building was $2, and that today the price of that building was $10 per unit, and we knew the number of units of labor that went into it and the number of units of material, couldn't you very easily find from the cost of that ten years ago the cost of it today?

A. That would be so if that condition exists. Such a condition as you outline has never, in my recollection, been in existence.

Q. But if it did exist, I say, wouldn't that furnish the very best index of the cost of the building?

A. Yes, but it never does exist. There never is a time anywhere when those conditions remain absolutely stable.

Q. My illustration didn't keep them stable.

445 A. So far as your illustration goes it is all right.

Q. When you know what the illustration is it is all right; it is easy to change from one condition to the other?

A. Your illustration sounds entirely foolish to me, because it never happened. There never was such a case.

Q. There never was a case where labor cost twice as much at one time as another?

A. There never was a case where labor remained exactly the same ten years.

Q. Oh, no, they are the conditions exactly.

Commissioner Northcott: He doubled the unit price.

The Witness: Even that would be almost impossible.

Judge Ritz:

Q. If it is impossible for them to remain the same, and impossible to change, what becomes of the conditions?

A. Conditions are always in a state of very wide flux.

Q. But they are always somewhere, aren't they?

A. But they are always changing. It is very hard to know what they all were ten years ago.

Q. If you have the cost of labor, what you actually paid for labor ten years ago, you know what they were then?

A. No, I don't think I do.

Q. As a matter of fact, it is a heap easier to tell what conditions were in the past than to tell what they will be in the future?

A. No; it is just as difficult to tell what they were in the
446 past as to tell what they will be in the near future.

Q. Then history affords us no light?

A. The reason is you have no means of checking. The very advantage of the reproduction method is that you are dealing with things that are in existence today, and everybody can go to it and check them. If you would tell me what conditions were ten years ago in this town I haven't the least chance in the world of going out and checking more than a small fraction of them, and then I wouldn't be certain that I had gotten reliable information. That is the trouble with all this past cost; you don't know the conditions. Today is the best time to know all the conditions and all the surroundings and check them.

Q. Then why, if these things can be definitely and certainly determined as of today, should experts ever differ as to the cost of anything at the present time?

A. Because there are different kinds of experts, just as there are different kinds of lawyers.

Q. The reason is because one man checks it differently from another and arrives at a different conclusion?

A. Well, it is astonishing how near engineers get together when they get all the same facts before them. When they get all the same facts before them, their estimates on properties don't vary five per cent, or three per cent. One of the advantages of putting the engineers on each side together is not so much to get their opin-
447 ions together as to get their facts together, to be sure that they are talking about the same thing, the same property, the same amount of property, and the same conditions under which it is to be reproduced. If you could guarantee that the engineers on both sides with equal experience had those same facts before them, you wouldn't find wide differences of opinion.

Q. You wouldn't find any differences at all, would you?

A. Oh, yes; value is not a mathematical proposition. Estimating is more or less a matter of opinion. It is an expression of judgment based on experience and knowledge of the facts; and I am very suspicious if it agrees too closely.

Q. And any determination of the cost of a structure at this time based upon estimates is bound to be more or less subject to change,

and that is demonstrated by the fact that you haven't sufficient reliance on your own estimate to put it in here without allowing 5 per cent contingencies?

A. Yes, because I suspect that I have forgotten certain things, just as I find that the railroad siding was forgotten; and there are unquestionably other things there which, though they have gone into this property, haven't been called to the attention of the man who made this inventory.

(Witness stands aside.)

448 NOTE.—After the conclusion of the foregoing hearing, the witness Walter E. Miller, complying with requests made of him in the evidence, made the following statement to the shorthand reporter in order that the same might be incorporated in this transcript:

"My calculation of the additions to be made to my estimates of cost of reproduction new and cost new less depreciation for Item #44, "Services & Fittings," which additions are necessitated by a misunderstanding on my part formerly, as to what work of that kind the company had done at its own expense, are as follows:

"Cost of reproduction new	$4,338
Cost new less depreciation	3,187

"These and the other four corrections, together with their proportionate amounts of overhead or general expenses, namely, 13.5%, make the total additions to my estimates,

"Cost new	$11,243
Do., less deprec'n	9,617"

NOTE.—Both the Applicant and the Respondent at this point announced that they had no further evidence to take at this time, but that they expected to introduce additional evidence at some later date to be hereafter fixed.

449 I, Charles V. Price, a Shorthand Reporter, do hereby certify that the foregoing is a true and correct transcript of the evidence and all of the evidence introduced before the Public Service Commission on the hearing of the case of Bluefield Water Works and Improvement Company v. The City of Bluefield, at Bluefield, West Virginia, on July 24-27, 1916, as reported by me in shorthand, with the exception of the exhibits therewith filed, and that said exhibits are hereto appended.

Given under my hand this the 16th day of August, 1916.

CHARLES V. PRICE,
Shorthand Reporter.

449a *Inventory of the Properties of the Bluefield Water Works & Improvement Company, Bluefield, West Virginia.*

January 1, 1915.

Alvord & Burdick, Engineers, Chicago.

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453 *Introduction.*

This inventory is a detailed statement of the properties of the Bluefield Water Works and Improvement Company at Bluefield, West Virginia, as on January 1st, 1915.

The General scheme of this inventory is to arrange the items according to the order of construction which would be followed were the plant to be reconstructed at the present time. Some slight deviations from this general scheme are made in order to group all like parts of the property together, but in general this idea is followed in the following statement.

454 *General Statistics.*

Bluefield Water Works & Improvement Company.

(1) Population Served: (January 1, 1915) 14,500.

(2) Water Supply:

(*a*) Gravity Supply from the Gravity Springs to Bland Street Tank.

(*b*) Pumping from Beaver Pond to Bland St. Tank.

(*c*) Pumping from the Ada Springs to the Twin Tanks.

(3) Pumping Stations:

(*a*) Ada Pumping Station:

1 horizontal cross compound Snow pumping engine 1,500,000 gals. per day against 305 lb. head.

1 Worthington double acting, horizontal, duplex pump, 1,500,000 gals. per day.

2 Sterling 148 H. P. boilers.

(*b*) Beaver Pond:

1 Worthington double acting horizontal duplex pump, 1,000,000 gals. per day.

1—80 H. P. Erie City boiler.

1—100 " " " "

(4) Spring Lines:

13.75 miles collecting and force mains 3″ to 10″.

(5) Distribution System:

Mains of all kinds	31.61	miles.
Cast Iron Mains	18.46	"
Wrought Iron Mains	13.15	"
Tons Cast Iron Pipe	1,664.3	
" " " specials	32.1	
Miles of mains per 1,000 population	2.18	
2—750,000 gal. steel tanks	....	
1—250,000 " " "	....	

(6) Services ..... 2,234.
Services per mile of pipe 70.7
Persons per service 6.5

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(7) Meters in Use ..... 1,467.
Per cent of services metered 65.6

(8) Hydrants:

Owned by Company	15
" " City	103

(9) Consumption: Average (1914) ..... 870,000 g. p. d.
Per Capita ..... 60 "
" Service ..... 389 "

(10) Pressure Range ..... 0 lbs. to 120 lbs.

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History of the Water Works.

The first work done in Bluefield for the establishment of a water works was the purchase of Springs Nos. 1 and 2 by the Norfolk and Western Railroad in 1888. A pipe line was laid to a wooden tank located near the site of the present Bland Street tank and from there to the railroad. In 1891, the Bluefield Water Works and Improvement Company took over the property and extended the collecting system to include Springs Nos. 3-4-5 and 6, and laid the distribution system between Lee and Mercer Streets as well as on the north side of the tracks. The Beaver Pond spring was purchased in 1892 and a pumping station erected to pump to a new steel tank—the present Bland Street tank. In 1900 it became necessary to further extend the water supply and the Ada Spring was purchased and developed. A reservoir was built to conserve the excess flow of the spring for use in the dry season, but its use was discouraged and finally forbidden by the city in 1909. In 1906, the water system was again increased by the erection of the present Ada Pumping Station and

the Twin Tanks. Additional springs have been added from time to time until at present there are 21 in use and 2 undeveloped. The pipe system has grown steadily and now reaches practically
457 every house in town, most of the exceptions being houses that are located too high on the hillsides to be served.

The city is divided into two districts. One is served by the Bland Street tank and the other by the Twin tanks. A float valve in the Bland Street tank operates on the high pressure line and keeps the tank filled at times when the Gravity Springs do not supply sufficient water. Three electric hydraulic valves connect the high pressure district with the low and are operated by switches in the Water Works office in case of a big fire down town.

458 Franchises.

Present: Mayor, Recorder and Council-men Nash & Foutz.

Minutes of meetings held Nov. 24, and Dec. 2nd, 1890, were read and approved, also special meeting of Jan'y 3, 1891.

Upon application of the Bluefield Water Works and Improvement Co., represented by L. C. Tabb, the following was read and adopted:

Whereas, the said Bluefield Water Works and Improvement Company, a corporation doing business in Mercer County, West Virginia, and now the owner of water-works in the City of Bluefield, is desirous to obtain the privilege of maintaining the said water-works and of constructing and maintaining additional works and facilities for maintaining transporting and furnishing water for the use of the said City of Bluefield, and the citizens thereof and the owners of property therein, for domestic and manufacturing purposes, and for all other uses and purposes for which it is desirable, for rent, lease, hire, sale and reward.

And whereas the Council of the said City of Bluefield deems it desirable and important to the said City of Bluefield and the inhabitants thereof, that the construction and maintenance of water-works for the purposes aforesaid, should be provided for, encouraged and facilitated, Therefore,

Be it ordained by the Council of the City of Bluefield that the said Bluefield Water Works and Improvement Company, its successors and assigns, have the right to construct and forever maintain, their said water-works, pipes and mains through, beneath, over, across and along any and all of the streets, alleys and public grounds of the said City of Bluefield, for the purposes of maintaining, supplying and furnishing water to the said City of Bluefield and the citizens and property holders thereof, for domestic and manufacturing purposes, and for all other purposes for which it is desirable, for rent, lease, hire, sale and reward, upon any terms and conditions that, from time to time may be agreed up- by and between the said Bluefield Water Works and Improvement Company, its successors or assigns, and the said City of Bluefield and other patrons and customers of the said Bluefield Water Works & Improvement Co., and its successors and assigns.

459 And be it further ordained by the Council of the City of Bluefield, that the aforesaid rights and privileges shall extend to all public grounds, street and alleys, hereafter acquired and established by the said City of Bluefield as well as those now in existence, owned and established, by the said City of Bluefield.

[Seal City of Bluefield, W. Va.]

STATE OF WEST VIRGINIA,
County of Mercer,
City of Bluefield, To wit:

I, J. T. Akers, Auditor of the City of Bluefield, do hereby certify that the foregoing and attached is a correct copy from the minutes of a meeting of the Council of said City held on the 20th, day of January, 1891.

Given under my hand and seal of said City this 11th day of January, 1915.

(Signed) J. T. AKERS,
Auditor.

460 At a special meeting of the Council of the Town of Bluefield, held at the office of Ash M. Prince in the said town on the 3d day of October, 1892, Present

J. M. Sanders, Mayor of said town and the following councilmen: Ash M. Prince, G. A. Shirey, E. P. Godby and W. T. Watkins.

Whereas the Council of the town of Bluefield at a meeting thereof, held on the 20th day of January, 1891, passed the following ordinance:

Upon application of the Bluefield Water Works and Improvement Company, represented by L. C. Tabb, the following was read and adopted:

Whereas: the said Bluefield Water Works and Improvement Company, a corporation doing business in Mercer County, West Virginia, and now the owner of water-works in the City of Bluefield, is desirous to obtain the privilege of maintaining the said water-works and of constructing, and maintaining, transporting and furnishing water for the use of the said City of Bluefield and the citizens thereof and the owners of property therein, for domestic and manufacturing, and for all other uses and purposes for which it is desirable, for rent, lease, hire, sale and reward.

And whereas, the Council of the said City of Bluefield deems it desirable and important to the said City of Bluefield and the inhabitants thereof that the construction and maintenance of water-works for the purpose aforesaid should be provided for, encouraged and facilitated; Therefore,

Be it ordained by the Council of the City of Bluefield that the said Bluefield Water Works and Improvement Company, its successors and assigns have the right to construct and forever maintain their said water-works, pipes and mains through, beneath, over, across and along any and all of the streets, alleys and public grounds of the

said City of Bluefield, for the purpose of maintaining supplying and furnishing water to the said City of Bluefield and the citizens and property holders thereof for domestic and manufacturing purposes and for all other purposes for which it is desirable, for rent, lease, hire, sale and reward, upon any terms and conditions that, from time to time may be agreed upon by and between the said Bluefield Water and Improvement Company, its successors and assigns and the said City of Bluefield and other patrons and customers of the said Bluefield Water Works and Improvement Company and its successors and assigns:

And be it further ordained by the Council of the City of Bluefield, that the aforesaid rights and privileges shall extend to all public grounds, streeets and alleys hereafter acquired and established
461 by the said City of Bluefield, as well as those now in existence, owned and established by the said City of Bluefield.

And whereas, it is suggested that said ordinance does not secure to the general public as fully as it should the right to have and demand water from said Bluefield Water Works and Improvement Company to the extent of its ability to furnish same, at fair and reasonable prices;

On motion—It is ordered and ordained,

First. That the said Bluefield Water Works and Improvement Company, shall, at all times, furnish this town, the general public, persons and corporations with water, to the extent of said Company's ability to furnish same, and at prices to be agreed on by said Company and to purchasers of water from said Company; the maximum charges to be made by said Company for water shall not exceed present rates for private consumers & 25¢ per 1,000 gals. for consumers by meter.

Second. That the general public shall, at all times, have the right to have and demand from said Bluefield Water Works and Improvement Company water for all proper and legitimate uses, to the extent of the ability of said Company to furnish same, on the terms hereinbefore prescribed.

Third. The said Bluefield Water Works and Improvement Company shall conduct its business of supplying the public with water in accordance with the ordinances of this town, heretofore or to be hereafter enacted, so long as said Company operates its said business under the authority conferred on it by the ordinances of this town, except that the maximum price to be charged for water, as fixed by this ordinance, shall not be changed without the consent of said Company.

Fourth. That the powers heretofore conferred upon said Bluefield Water Works and Improvement Company as shown by the ordinance heretofore enacted and incorporated herein, is hereby approved and confirmed.

The said Bluefield Water Works and Improvement Company, by L. C. Tabb, its agent, hereby consents to this ordinance and said

Company agrees to conduct its said business in accordance therewith, so long as it conducts its said business under the authority of this town.

[Seal City of Bluefield, W. Va.]

462 STATE OF WEST VIRGINIA,
County of Mercer,
City of Bluefield, To wit:

I, J. T. Akers, Auditor of the City of Bluefield, do hereby certify that the foregoing and attached is a correct copy from the minutes of a meeting of the Council of said City held on the 3rd day of October, 1892.

Given under my hand and seal of said City this 11th day of January, 1915.

(Signed) J. T. AKERS,
Auditor.

462½ *Preliminary Cost and Real Estate.*

463 Item No. 1. Preliminary Cost.

Includes all costs preliminary to the development of a precise plan of construction, such as:

(*a*) Business investigations and negotiations.
(*b*) Expert preliminary engineering reports.
(*c*) Legal Advice.
(*d*) Special engineering investigations for source of water supply.
(*e*) Optioning Real Estate (Cost of).
(*f*) Organization of Company.
(*g*) Acquisition of Franchise.
(*h*) And, in general, all costs such as are incidental to the proper placing of the enterprise upon a definite basis up to the point where detailed plans may be prepared and actual construction begun.

Item No. 2. Real Estate and Rights-of-Way.

(*a*) Real Estate.

The grant of spring tract includes the right-of-way for the pipe lines though the owner's farm.

Gravity Springs:

No. 1—11/21/'87—Estill Bailey & wife, Jos. I. Doran	0.5	acre.
No. 2— 9/28/'87—Jas. B. Bailey & wife " " "	0.5	"
No. 3— 7/23/'90—Jno. T. Bailey " " " & J. H. Dingee	0.5	"
No. 3— 2/21/'11— " " " & wife, B. W. W. & I. Co.	1.128	"
No. 4— 7/23/'90— " " " Jos. I. Doran & J. H. Dingee	0.5	"
No. 4— 2/21/'11— " " " & wife, B. W. W. & I. Co.	1.760	"
No. 5— 7/17/'90—A. W. Bailey & wife, Jos. I. Doran & J. H. Dingee	0.5	"
No. 6— 7/17/'90—A. J. Bailey & wife, Jos. I. Doran & J. H. Dingee	0.5	"
No. 6— 7/31/'06—C. A. " & wife, B. W. W. & I. Co.	1.91	"
No. 6— 5/20/'08— " " " " " "	2.50	"
7 & 8— 5/20/'08—C. A. " et ux., et al., "	1.50	"
No. 9— 6/ 4/'08—Robt. W. Tuggle & wife, "	1.17	"
No. 10— 6/ 4/'08— " " " " " "	0.30	"
No. 11— 6/ 4/'08— " " " " " "	0.35	"

No. 12—12/13/10—Thos. P. Morgan & wife, B. W. W. & I. Co.	0.35	A.	
" 13—12/13/10— " " " " " "	0.37	"	
" 14—12/13/10— " " " " " "	0.51	"	
" 15— 6/7/09—R. H. Bailey " " "	236.25	"	
" 16— 7/22/10— " " " " " "	1.06	"	
" 17— 7/22/10—Ballard P. Wilson " "	1.99	"	
" 18— 7/22/10—Walter T. Bailey " " "	41.88	"	
" 18—12/24/14— " " " " " "	1.11	"	
" 20—10/14/05—W. H. Thompson " " "	.0578	"	
" 21—12/20/00— " " " " " "	2.00	"	
" 22— 10/1/07—Estill Bailey " " "	0.46	"	

Jarrell Spring:

No. 19—10/14/05—Martha S. Jarrell et al., B. W. W. & I. Co.	1.00	A.	

Beaver Pond Spring:

No. 23— 5/5/92—Carmack Bailey et al., B. W. W. & I. Co.	1.00	A.	

Twin Tanks:

1/22/97—H. M. Nash, et al., B. W. W. & I. Co.	15.25	A.	

Bland Street Tank:

Lot 5—Sec. 44—Bluefield.

Office:

Lot 1—Sec. 22—Bluefield.

Ada Pumping Station:

7/27/00—Estill Bailey & wife, B. W. W. & I. Co.	0.50	A.
10/1/07— " " " " "	1.12	"

Honaker Mill, Reservoir & Dam:

1/22/00—E. L. Bailey & wife, B. W. W. & I. Co.	99.36	A.

Ruble Farm:

1/18/08—H. C. Ruble & wife, B. W. W. & I. Co.	46.50	A.

465 (*b*) Rights-of-Way.

Beaver Pond and Gravity Spring Lines:

9/28/87—Nancy Williams to Jos. Doran.
" —Cathrine Davidson to Jos. I. Doran.
" —Eliza Bailey " " " "
8/14/90—Mary E. Hale " " " " & J. H. Dingee.
" —Catherine P. Davidson to Jos. I. Doran & J. H. Dingee.
3/10/92—E. J. Bailey & wife to B. W. W. & I. Co.
5/15/92—Eliza Bailey " "
" —H. B. Bailey & wife " "
" —Jas. R. Calfee & wife to "
" —Jno. P. Williams et al. to "
" —T. M. Calfee et al. " "

Ada Spring Lines:

2/28/00—Boyd S. Belcher & wife to B. W. W. & I. Co.
" —Jas. Hearn " " " "
" —Mary E. Roland & husband to "
7/13/00—R. M. Calfee " "
" —Jas. Hearn & wife " "
" —E. J. Bailey & wife " "
" —Geo. P. Bailey & wife " "
" —Ellen P. Bailey " "
7/27/00—Estill Bailey " " " "
7/30/00—J. W. Caldwell " " " "
8/6/00—G. B. Higginbotham et al. " "
8/16/00—Rebecca Bailey " "
10/21/09—Lucy J. Taylor " "
7/22/10—Jno. W. Wilson & wife " "
8/4/10—A. B. Helton " " " "

Jarrell Spring Line:

2/28/00—Jno. Eagle " "
12/6/09—C. W. Mills et al. " "

(*c*) Buildings and Improvements.

At Beaver Pond Spring (Exhibits Nos. 1.—2*a* & 2*b*):

One story frame cottage at west end of station lot. Built about 1892. Well painted and in good condition.
Area of main floor 708 sq. ft.
Cubic contents, outside dimensions from bottom of foundation to average height of roof 11,376 cu. ft.

466 Built of frame throughout with outside walls weather boarded; inside walls and ceiling made of beaded pine ceiling. Yellow pine floors. Roof, of sheet iron. Foundation is of

stone set in lime mortar and is 4 feet high x 8 inches thick. The living rooms are painted inside.

The house contains three rooms and one enclosed porch.

At Ada Pumping Station:

3-room cottage built about 1902. The building if of frame construction, walls and ceiling ceiled with beaded tongue and grooved pine ceiling. The floors are of pine and the outside walls of 5" weather boarding. It has a gabled roof covered with Carey roofing. The building is set on posts. Unpainted and in very poor repair.

Cubic contents, outside dimensions from top of foundation to average height of roof 6,250 cu. ft.

Area of main floor 457 sq. ft.

At Spring No. 6:

Tool House built out of rough lumber about 1911.

Area of floor 151 sq. ft.

Cubic contents, outside dimensions from bottom of sills to average height of roof 1,238 cu. ft.

Frame construction. Walls made of 1" x 10" boards nailed vertically with 1" x 4" strips over joints. Roof planked and covered with tar paper. Rough floor over half of building. Unpainted and in poor repair. Not used.

At Spring No. 15 (Henry Bailey farm):

This farm is in good order. It has a young orchard of about 40 trees, a 2 story house, barn, and a spring house.

467 Farm House (Exhibits No-. 3 & 4):

A two story frame structure on masonry piers built about 1900. The walls and ceiling are ceiled with chestnut ceiling and the floors are of pine. The roof is made of dipped and painted shingles and was put on in 1906. All of the doors and window trims are of pine. The exterior is painted. The house is in good repair.

Cubic contents, outside dimensions from top of piers to average height of roof 13,300 cu. ft.

Area of main floor 680 sq. ft.

The house contains 8 rooms and has two porches.

Barn & Crib (Exhibit No. 5):

Building made of rough lumber with a roof of dipped and painted shingles. It has four stalls and a haymow. Near one end is located a corn crib made of slats. This crib and the space between it and the barn is covered with a tin roof.

Cubic contents, outside dimensions from bottom of sills to average height of roof 10,640 cu. ft.

Spring House:

The building is of rough frame construction with a shingle roof, which overhangs 4′ 0″ at one end.
Cubic contents, outside dimensions, 410 cu. ft.

Fence:

4,450 lin. ft. rail fence.
7,200 " " woven wire fence—1 strand barb wire on top.
720 fence posts—8′ long—locust.

468 At Spring No. 21 (Ada Spring):

A small farm house and outbuildings are located near this spring. Built about 1902.

Farm House (Exhibit No. 6.):

One story frame structure with shingle roof. Rooms ceiled and floored with pine. Unpainted.
Cubic contents, outside dimensions, 7,100 cu. ft.
The house contains four rooms.

Barn:

Rough frame structure containing 1 stall and a haymow covered with a clapboard roof.
Cubic contents, outside dimensions, 2,170 cu. ft.

Spring House:

Frame building covered with 1″ sheeting and weather board. Roof, dipped and painted shingles on sheeting. Overhangs 2′ 4″ at one end. Floor of 1″ pine.
Cubic contents, outside dimensions, 425 cu. ft.

Dairy or Root House:

Frame house covered with earth. Walls and roof of 2″ plank, floor 1″ oak. .58 lin. ft. 8″ shelving.
Cubic contents, outside dimensions, 186 cu. ft.
400 board feet rough lumber in the house.

Tool House:

Rough frame building with tar paper roof.
Cubic contents, outside dimensions, 840 cu. ft.

469 Board Walks:

90 lin. ft. 2′ 9″ wide = 400 bd. ft.

Fences:

1,350 bd. ft. solid board fence (171 lin. ft. 4′ high posts spaced 6′ apart).
3,750 bd. ft. solid board fence (441 lin ft. 5′ high posts spaced 7′ apart).
1,750 lin. ft. barb wire.
55 posts 8′ long (small).

At Ruble Farm.

Farm House (Exhibits Nos. 7 & 8):

One story frame house on cut stone foundation with large outside cut stone chimney. Roof of tin. Interior ceiled and floored. Unpainted.
Cubic contents, outside dimensions, 8,100 cu. ft.
550 cu. ft. cut stone in chimney and foundation.
House contains five rooms.

Tool House:

Weather boarding on rough frame with clapboard roof. No inside finish, doors or windows—openings only. Unpainted.

Office Building (Exhibits Nos. 9 & 10):

The original office building was destroyed by fire in 1912 and the present structure erected on the same site immediately afterward.
The main floor is built several feet above the ground level and has a basement under it. The foundation is of concrete extend-
470 ing to the main floor level in the front part of the building and to the basement level in the rear wing, with a brick wall on the latter part extending up to the main floor. All outside walls above the ma-n floor level are of rough texture brick veneer set against building paper on 1″ sheathing. The roof is of sheathing covered with galvanized shingles. It contains four dormer windows.
The basement has a concrete floor and is divided into rooms by board and plaster walls.
The main floor is plastered throughout and the front two rooms papered while the attic is unfinished excepting for a rough floor.
All windows in the basement are barred. The main floor trim is all first quality pine, painted with white enamel. The doors and windows are fitted with brushed brass fixtures.
Two iron safes are built into the wall and a vault 19′ 0″ x 9′ 6″ in plan, made of concrete and brick, fitted with iron doors is set in the middle of the building.
The entire building is electric lighted and is heated with a hot water heating system. Two toilets and a sink are in the base-
471 ment and there is a sink and a lavatory on the main floor Shelves and cupboards are built into the walls in the laboratory.

A speaking tube system is enclosed within the walls. Before the building could be erected, the lot had to be graded down.

Cubic contents, outside dimensions, from main floor level to average height of roof 37,300 cu. ft.

Cubic contents of basement 13,010 cu. ft.

420 cu. yds. grading on lot.

The building contains the following rooms:

Basement:

1 meter testing room	floor area,	170	sq ft.
1 stock room	" "	220	" "
1 toilet and hall	" "	130	" "
1 shop room	" "	520	" "
1 boiler room	" "	76	" "

Main Floor:

1 room,	floor, area,	376	sq. ft.
1 "	" "	227	" "
1 "	" "	231	" "
1 "	" "	147	" "
1 laboratory	" "	153	" "
1 store room	" "	71	" "
1 hall	" "	77	" "

Garage (Exhibits Nos. 9 & 11):

The garage is a brick building built in connection with the office building. The foundation is of concrete with outside walls, 8" thick.

The roof is of tin on 1" sheathing and is supported from the
472 side walls. The center beam is trussed with two rods and turnbuckles. A 6' x 6' galvanized iron sky light is placed over the room used as a blacksmith shop. The floor of the vestibule and truck room is of concrete, the latter containing a concrete pit 3' 0" x 7' 0" x 4' 6" (inside dimensions) with a loose board cover made of 2" x 8" lumber. Interior partition, walls and ceilings are covered with pressed galvanized iron. All windows are barred. The garage door is made in four leaves 8' 6" x 2' 0" of two thicknesses of 1" plank with trim. The building is wired and a chimney made of a joint of 10" C. I. pipe is located in the blacksmith shop.

Cubic contents, outside dimensions, from bottom of fastings to top of walls 9,200 cu. ft.

The building contains the following rooms:

1 truck room,	357	sq. ft.
1 blacksmith shop,	138	" "
1 vestibule,	85	" "

473 The water supply (Exhibits Nos. 12, 13, 14, 15*a* & 15*b*):

The water supply is derived from a series of springs located along the mountain ridge which lies to the south of the city. These springs

appear out of the rocks and most of them lie half way up the mountain side in places difficult of access. At each spring a small tract of land has been purchased by the Water Company, cleared of all brush and dead wood and fenced as a protection.

The water is gathered in vitrified tile pipes laid with open joints in trenches approximately two feet wide, which were afterward filled with coarse rock nearly to the surface and covered with earth. In this manner the water is gathered without allowing it to come to the surface of the ground and become contaminated. Where there was any possibility of surface water getting to the tile lines, ditches, concrete walls or other means were used to prevent this water from being collected.

The tile infiltration lines are quite extensive for some of the springs as they have been run out to catch the water wherever it appears. These lines were very difficult to lay in practically all cases, as the trenches lie through rock and had to be blasted. The water is conducted to a small concrete basin over which is a spring house of either frame or concrete construction.

474 Owing to the location of these springs all work connected with the construction of the infiltration lines, head houses and pipe lines up the mountain side was extremely difficult. Materials had to be carried by hand in many cases for long distances through the woods over the rocky ground, as the grade was too steep, the undergrowth too dense or the ground too rocky to permit teams to be used.

There are twenty-three springs in the collecting system, although some of these springs contain more than one head house and set of infiltration lines. The system is divided into parts which have to be cared for in various ways before the water can be delivered to the city distribution system. One spring, Spring No. 23 or the Beaver Pond Spring, is so located that it has to be pumped, while the next ten springs (The Gravity Springs) lying to the east are able to deliver their water to the Bland Street tank by gravity. The next eleven springs ("The Ada Springs") lying still further east, deliver their water to the Ada Pumping Station by gravity from where it is lifted 536 feet to the Twin Tanks. The Jarrell Spring, the farthest one east, is approximately 7½ miles from the city and has not been developed.

475 Item No. 3. The Gravity Springs (Exhibit No. 12).

(*a*) Spring No. 1 (Exhibits Nos. 12 & 16).

The tract comprises ½ acre which has been cleared of all underbrush and dead wood. It is surrounded by a woven wire fence and two strings of barb wire. One head house with a concrete basin and frame superstructure is located at this spring.

All material had to be carried a distance of approximately 500 feet over rock ground.

Spring purchased in 1888, but present head house and infiltration lines built in 1906-1907.

Quantities:

(1) Land Improvements:

Clearing ½ acre of brush and dead wood.
100 cu. yds. earth and loose rock excavation in leveling up land.
36½ rods woven wire fence.
600 lin. ft. barb wire.
60 fence posts 8 ft. long, chestnut.

(2) Infiltration Lines:

20 lin. ft. 6″ Vit. Tile in 4′ rock trench.
20 " " 4″ " " " " " "
13 cu. yds. blasted stone hammered to small bits.

(3) Head House:

Area of floor 22½ sq. ft. Cu. content, outside dimensions from top concrete to ave. height of roof, 174 cu. ft.
4. cu. yds. rock excavation.
1.7 " " concrete in basin.
1—Frame superstructure bolted to concrete. Framework 2″ x 4″ pine covered with 1″ rough sheeting and pine weather boarding with trim. Roof painted and dipped shingles on 1″ sheeting.
476 1 door made of 2 layers of 1″ pine tongue and groove lumber. and fitted with 3 strap hinges and padlock. Building painted 2 coats outside.
1—Iron screen over outlet box 8″ x 16″.

(4) Piping in Head House:

Blow-Off. (Ave. Depth 2′.)
9′ 0″—4″ C. I. Pipe, H. & S.
9′ 0″—4″ Vit. Tile.
1—4″ Gate Valve.

(*b*) Spring No. 2 (Exhibits Nos. 12 & 16).

This tract comprises ½ acre and has been cleared of all brush and dead wood. The fence is of woven wire, surmounted by two lines of barb wire. Half of the post holes required blasting. One head house having a concrete basin and frame superstructure is located at this spring.

All material had to be carried approximately 1,000 feet up the mountainside.

Spring purchased in 1888; developed in 1906-1907.

Quantities:

(1) Land Improvements:

Clearing ½ acre of brush and dead wood.
100 cu. yds. of earth fill (ave. 300′ wheelbarrow haul).
39 rods woven wire fence.
636 lin. ft. barb " "
64 fence posts 8 ft. long, chestnut.

477 (2) Infiltration Lines:

90 lin. ft. 4″ vit. tile in 4′ trench (½ clay and ½ boulders).
20 cu. yds. boulders hammered to small pieces.

(3) Head House:

Area of floor—21 sq. ft.
Cubic contents, from top of concrete basin to average height of roof, outside dimensions—167 cu. ft.
4¾ cu. yds. excavation (earth).
2 " " concrete in basin.
1—8″ x 16″ Iron screen over outlet box.
1—Frame superstructure, bolted to concrete. Framework 2″ x 4″ pine covered with 1″ rough sheeting and pine weather boarding and trim. The house is floored with 2″ rough oak, excepting for an opening 2′ 10″ x 1′ 4″ and has a door made of two thicknesses of 1″ pine tongue and grooved lumber, fitted with 3 strip hinges and padlock. Building painted 2 coats outside.

(*a*) Piping in Head House:

Blow-off (Ave. Depth 2′).

5′ 6″—4″ C. I. pipe H. & S.
10′ 0″—4″ Vit. tile.
1—4″ C. I. gate valve, H. & S.

(*c*) Spring No. 3 (Exhibits Nos. 12 & 16).

Area of tract 1.628 acres. Land cleared of brush and dead wood and fenced with a woven wire fence. The head house has a concrete basin and frame superstructure.
478 All material had to be carried 500 feet up a steep rocky incline.
Spring purchased in 1890 and developed 1906-1907.

Quantities:

(1) Land Improvements:

Clearing 1.628 acres of dead wood and brush.
75 cu. yds. of grading around head house.
115 rods woven wire fence.
190 fence posts, 8 feet long, chestnut.

(2) Infiltration Lines:

10 lin. ft. 6″ Vit. tile in 4′ trench (2/3 solid rock).
1038 " " 4″ " " " 4′ " (2/3 " ").
234 cu. yds. boulders hammered to small pieces.

(3) Head House:

Area of Floor—18.6 sq. ft.
Cubical contents, outside dimensions, from top of concrete basin to average height, of roof—153 cu. ft.
4¾ cu. yds. excavation (earth).
2 " " concrete in basin.
1—8″ x 18″ Iron screen over outlet box.
1—Frame superstructure bolted to concrete basin. Framework 2″ x 4″ pine covered with 1″ rough sheeting and pine weather boarding and trim. The roof is made of dipped and painted shingles laid on 1″ rough sheeting. 1 door, made of 2 layers tongue and grooved 1″ pine fitted with three strap hinges and padlock. Building painted 2 coats outside.

479 (4) Piping in Head House:

Blow-off (Ave. depth 2′ 0″).
4′ 0″—4″ C. I. pipe, H. & S.
8′ 0″—4″ Vit. tile.
1—4″ gate valve, H. & S.

(*d*) Spring No. 4 (Exhibits Nos. 12 & 17):

Area of tract 2.26 acres. Land cleared of brush and dead wood and fenced with a woven wire fence. 2 head houses, each of frame on concrete basin, are at this spring.
The material for the lower spring had to be carried 300 feet over extremely rough ground, while that for the upper was carried 500 feet.
Spring purchased in 1890; developed 1906-1907.

Quantities:

(1) Land Improvement:

Clearing 2.26 acres of dead wood and brush.
55 cu. yds. grading around head houses.
118 rods woven wire fence.
196 fence posts 8 ft. long, chestnut.

Lower Spring (No. 4 A):

(1) Infiltration Lines:

10′ 0″—6″ vit. tile in 4′ trench (½ rock).
325′ 0″—4″ " " " 4′ " (½ ").
75—cu. yds. rock hammered into small pieces.

(2) Head House.

Area of floor 21 sq. ft.
Cubic contents, outside dimensions from top of concrete basin to average height of roof—126 cu. ft.
480 4 cu. yds. earth excavation.
1.8 cu. " concrete in basin.
1—8" x 18" iron screen over outlet box.
1—Frame superstructure bolted to concrete basin. Framework 2" x 4" covered with 1" rough sheeting and pine weather boarding and trim. Roof, dipped and painted shingles on 1" rough sheeting—1 door made of two layers 1" tongue and grooved pine and fitted with 2 strap hinges and a padlock. Building painted 2 coats outside.

(3) Piping in Head House.

Blow-off (Ave. Depth 1½ feet).
4' 0"—4" C. I. pipe H. & S.
5' 0"—4" vit. tile.
1—4" gate valve, H. & S.

Upper Spring (No. 4 B):

(1) Infiltration Lines:

10' 0"—6" vit. tile in 4' trench (2/3 rock).
625' —4" " " " 4' " (" ").
140—cu. yds. rock hammered into small pieces.

(2) Head House:

Area of floor 19 sq. ft.
Cubic contents, outside dimensions from top of concrete basin to average height of roof—113 cu. ft.
3 cu. yds. excavation (earth).
1.7 cu. yds. concrete in basin.
1—8" x 17" Iron Screen over outlet box.
1—Strainer over overflow.
1—Frame superstructure bolted to concrete basin. Framework 2" x 4" pine covered with 1" rough sheeting and weather
481 boarded. Roof, dippes and painted shingles laid on 1" rough sheeting. 1 door made of 2 layers tongue and grooved 1" pine, fitted with 2 strap hinges and a padlock. Lumber, pine and poplar. Building unpainted.

(3) Piping in Head House:

Overflow (Ave. depth 2' 0"):

48' 0"—4" vit. tile in 2' trench.

Blow-off (Ave. depth 2′ 0″):

6′ 0″—4″ C. I. pipe H. & S.
6′ 0″—4″ Vit. tile.
1—4″ gate valve H. & S.

(e) Spring No. 5 (Exhibits Nos. 12 & 17).

Area of tract ½ acre. Land cleared of brush and dead wood and fenced with a woven wire fence. 1 head house with concrete basin and frame superstructure. All material had to be carried 500 feet. Spring purchased in 1890; developed 1906-7.

Quantities:

(1) Land Improvements:

Clearing ½ acre of dead timber and brush.
20 cu. yds. grading at head house.
36½ rods woven wire fence.
60 fence posts 8 feet long, chestnut.

(2) Infiltration Lines:

10′ 0″—6″ vit. tile in 4′ trench (½ rock).
175′ 0″—4″ " " " 4′ " (½ ").
41—cu. yds. rock hammered into small pieces.

482 (3) Head House:

Area of floor 13.5 sq. ft.
Cubic contents, outside dimensions from top of concrete basin to average height of roof—82 cu. ft.
2.5 cu. yds. excavation (earth).
1.4 cu. yds. concrete in basin.
1 8″x15″ iron screen over outlet box.
1 Frame superstructure bolted to concrete basin. Framework 2″x4″ covered with 1″ rough sheeting, weather boarding and trim. Roof, dipped and painted shingles on 1″ rough sheeting. 1 door made of 2 layers tongue and grooved 1″ pine fitted with 2 strap hinges and a padlock. Outside of building painted 2 coats.

(4) Piping in Head House:

Blow-Off (Ave. depth 2′ 0″):

4′ 0″—4″ C. I. pipe H. & S.
4′ 0″—4″ vit. tile.
1—4″ gate valve, H. & S.

(*f*) Spring No. 6 (Exhibits Nos. 12 & 17).

Area of tract 4.91 acres. Land cleared of all dead wood and brush and fenced with woven wire fence. 2 head house- are at this spring, also a rough frame tool house and a short concrete retaining wall behind which is a small filter consisting of 20 yds. crushed stone covered with earth. All material could be hauled to the head house sited, but the pipe for the infiltration lines had to be distributed by hand.

Spring purchased in 1890; developed in 1908.

483 Quantities:

Clearing 4.91 acres of dead wood and brush.
200 cu. yds. grading.
158 rods woven wire fence.
260 fence posts 8 feet long, chestnut.

Upper Spring (No. 6 A):

(1) Infiltration Lines:

Little shooting required although trenches were full of boulders.
327′ 0″—6″ Vit. Tile in 5′ trench.
2,203′ 0″—4″ " " " 5′ "
562 cu. yds. boulders hammered into small pieces.

(2) Head House:

Area of floor 29 sq. ft.
Cubic contents, outside dimensions from top of concrete basin to average height of roof—200 cu. ft.
7½ cu. yds. excavation (earth).
3 cu. yds. concrete in basin.
1 7″x20″ iron screen over outlet box.
1 strainer over overflow.
1 Frame superstructure bolted to concrete basin. Framework 2″x4″ covered with 1″ rough poplar sheeting, weather boarding and trim. Roof, dipped and painted shingles on 1″ rough sheeting. 1 door made of 2 layers 1″ pine tongue and grooved lumber, fitted with 2 strap hinges and a padlock. Building painted 2 coats outside.

(3) Piping in Head House:

Blow-Off (Ave. depth 2′ 0″):

4′ 6″—6″ C. I. pipe H. & S.
30′ 0″—6″ Vit. tile.
1—6″ Gate valve.

Overflow (Ave. depth 1′ 0″):

13′ 0″—6″ Vit. Tile.

484 Lower Spring (No. 6 B):

(1) Infiltration Lines:

395′ 0″—6″ Vit. tile 6′ trench.
595′ 0″—4″ " " 4′ "
220 cu. yds. boulders hammered to small pieces.

(2) Head House:

Area of floor 18 sq. ft.
Cubic contents, outside dimensions from top of concrete basin to average height of roof—109 cu. ft.
5 cu. yds. excavation (earth).
2.3 cu. yds. concrete in basin.
1 8″ x 20″ iron screen over outlet.
1 Strainer over overflow.
1 Frame superstructure—pine and poplar—Framework 2″ x 4″ covered with 1″ rough sheeting and weather boarding with trim. Roof, stained and painted shingles on 1″ rough sheeting—1 door made of 2 layers tongue and groove 1″ pine fitted with 2 strap hinges and padlock. Building painted 2 coats outside.

(3) Piping in Head House:

Overflow:

3′ 0″—6″ Vit. tile.

Blow-Off:

4′ 6″—4″ C. I. pipe H. & S.
20′ 6″—4″ Vit. tile.
1—4″ gate valve, H. & S.

(4) Concrete Retaining Wall:

1 cu. yd. concrete in 10″ wall 2′ high.
20 " " boulders hammered to small pieces.

485 (5) Tool House:

Made of rough sawed 1″ oak and poplar boards 10″ x 12″ wide nailed vertically to framework of 2 x 4s and 2 x 6s with 1 x 4 strips nailed over joints. Roof, tar paper on 1″ rough sheeting. ½ of building floored.
Area of floor 155 sq. ft.
Cubic contents, outside dimensions from bottom of sills to average height of roof 1,240 cu. ft.

(*g*) Spring No. 7 & 8 (Exhibits Nos. 12 & 18).

Area of tract 1.5 acres. Land cleared of all dead wood and brush and fenced with woven wire fence. 3 head houses are on this tract. The clearing was very excessive here as the spot was used for a rotten log dump.

Spring purchased in 1908; developed in 1908.

Quantities:

Land Improvements:

Clearing 1.5 acres of brush and dead wood.
94 rods woven wire fence.
155 fence posts 8 ft. long, chestnut.

East Spring (No. 7 A):

(1) Infiltration Lines:

20'—4" Vit. tile 4' deep (rocky).
4½ cu. yds. boulders hammered to small pieces.

486 (2) Head House:

Area of floor 15 sq. ft.
Cubic contents, outside dimensions from top of concrete basin to average height of roof—90 cu. ft.
2.5 cu. yds. excavation (earth).
1.6 cu. yds. concrete in basin.
1—8" x 14" iron screen over outlet box.
1—Strainer over overflow.
1—Frame superstructure—pine and poplar. Frame 2" x 4" covered with 1" rough sheeting and weather boarding with trim. Roof, dipped and painted shingles on 1" rough sheeting. 1—door made of 2 layers 1" tongue and groove pine, fitted with 2 strap hinges and a padlock. Building painted 2 coats outside.

(3) Piping in Head House:

Blow-off (Ave. depth 1½ ft.):

4' 0"—4" C. I. pipe, H. & S.
10' 0"—4" Vit. tile.
1—4" gate valve H. & S.

Overflow:

7' 6"—4" Vit. tile.

Lower Spring (No. 7 B):

(1) Infiltration Lines:

560′ 0″—4″ Vit. title in 3′ trench (solid rock).
83 cu. yds. rock hammered to small pieces.

(2) Head House:

Area of floor 26 sq. ft.
Cubic contents, outside dimensions from top of concrete basin to average height of roof 155 cu. ft.
487 4.5 cu. yds. excavation (earth).
2.2 cu. yds. concrete in basin.
1—6″ x 14″ iron screen over outlet box.
1—Strainer over overflow.
1—Frame superstructure bolted to concrete basin—pine and poplar. Framework 2″ x 4″ with 1″ rough sheeting and weather boarding with trim. Roof, dipped and painted shingles laid on 1″ rough sheeting, 1 door made of 2 layers 1″ tongue and grooved pine, fitted with 2 strap hinges and a padlock. Building painted 2 coats outside.

(4) Piping in Head House:

Blow-off (Ave. cut 1½ ft.):

4′ 0″—4″ C. I. pipe, H. & S.
25′ 0″—4″ Vit. tile.
1—4″ gate valve, H. & S.

Overflow:

15′ 0″—4″ vit. tile.

West Spring (No. 7 C):

(1) Infiltration Lines:

250′ 0″—4″ vit. title in 4′ trench (½ solid Rock).
55 cu. yds. rock hammered into small pieces.

(2) Head House:

Area of floor 15 sq. ft.
Cubic contents, outside dimensions from top of concrete basin to average height of roof 89 cu. ft.
3.3 cu. yds. excavation (earth).
1.7 cu. yds. concrete in basin.
1—10″ x 15″ iron screen over outlet.
1—Strainer over overflow.

1—Frame superstructure bolted to concrete basin—pine and poplar. Framework 2″ x 4″ with 1″ rough sheeting and weather
488 boarding with trim. Roof, dipped and painted shingles on 1″ rough sheeting. 1 door made of 2 layers 1″ tongue and grooved pine, fitted with 2 strap hinges and a padlock. Building painted two coats.

(3) Piping in Head House:

Blow-off (Ave. depth 2 feet):

45′ 6″—4″ C. I. pipe, H. & S.
1—4″ gate valve, H. & S.

Overflow:

11′ 6″—4″ vit. tile.

(*h*) Spring No. 9 (Exhibits Nos. 12 & 19).

Area of tract 1.17 acres. Land cleared of brush and dead wood and fences with woven wire fencing. One head house at this spring. Carried all material 500 feet.
Spring purchased in 1908—developed in 1908.

Quantities:

(1) Land Improvements:

Clearing 1.17 acres of brush and dead wood.
88 rods woven wire fence.
145 posts 8′ long, chestnut.

(2) Infiltration Lines:

750′ 0″—4″ vit. tile 4′ trench (solid rock).
167 cu. yds. rock hammered to small pieces.

489 (3) Head House:

Area of floor 21 sq. ft.
Cubic contents, outside dimensions from top of concrete basin to average height of roof 127 cu. ft.
5 cu. yds. excavation (rock).
2.6 cu. yds. concrete in basin.
1—8″ x 20″ iron screen over outlet.
1—Strainer.
1—Frame superstructure bolted to concrete basin—pine and poplar. Framework 2″ x 4″ covered with 1″ rough sheeting and weather boarding with trim. Roof, dipped and painted shingles on 1″ rough sheeting. 1 door made of 1″ tongue and groove pine, fitted with 2 strap hinges and one padlock. Building painted 2 coats outside.

(*i*) Spring No. 10 (Exhibits Nos. 12 & 20).

Area of tract 0.3 acres. Land cleared of brush and dead wood and fences with woven wire fence. 1 head house is located at this spring. Carried material 500 feet.
Spring purchased in 1908—developed in 1908.

Quantities:

(1) Land Improvements:

Clearing 0.3 acre of brush and dead wood.
28 rods woven wire fence.
46 fence posts 8 feet long, chestnut.

(2) Infiltration Lines:

30′ 0″—4″ Vit. tile in 3′ trench (½ rock).
25′ 0″—4″ " " " 4′ " (earth).
50′ 0″—4″ " " " 4′ " (rock).
19 cu. yds. rock hammered to small pieces.

490 (3) Head House:

Area of floor 21 sq. ft.
Cubic contents, outside dimensions from top of concrete basin to average height of roof 127 cu. ft.
5 cu. yds. excavation (earth).
2.6 cu. yds. concrete in basin.
1—10″ x 16″ iron screen over outlet box.
1—Strainer.
1—Frame superstructure bolted to concrete basin—pine and poplar. Frame of 2″ x 4″ with 1″ rough sheeting and weather boarding with trim. Roof, dipped and painted shingles laid on 1″ rough sheeting. 1 door made of 1″ tongue and grooved lumber, fitted with 2 strap hinges and a padlock. Building painted 2 coats.

(4) Piping in Head House:

Blow-off (Ave. depth 2′ 0″):

5′ 0″—4″ C. I. pipe H. & S.
35′ 0″—4″ vit. tile.
1—4″ gate valve, H. & S.

Overflow:

19′ 0″—6″ vit. tile.

(*j*) Spring No. 11 (Exhibits Nos. 12 & 20).

Area of tract 0.35 acres. Land cleared of all brush and dead wood and fenced with woven wire fence. 1 head house at this spring.

Spring purchased in 1908—developed 1908.

491 Quantities:

(1) Land Improvements:

Clearing 0.35 acres of brush and dead wood.
40½ rods of woven wire fence.
67 fence posts 8 feet long, chestnut.

(2) Infiltration Lines:

10' 0"—4" Vit. tile 4' trench (earth).
2 cu. yds. rock hammered to small pieces.

(3) Head House:

Area of floor 13½ sq. ft.

Cubic contents, outside dimensions from top of concrete basin to average height of roof 72 cu. ft.

4 cu. yds. excavation (earth).

1.7 cu. yds. concrete in basin.

1—6" x 13" iron screen over outlet box.

1 Frame superstructure bolted to concrete basin—pine and poplar. Frame 2" x 4" covered with 1" rough sheeting and weatherboarding with trim. Roof, dipped and painted shingles, on 1" rough sheeting. 1 door of 2 layers of 1" tongue and groove lumber fitted with 2 strap hinges and a padlock. Building painted 2 coats outside.

(4) Piping in Head House:

Blow-off (Ave, depth 2' 0"):

13' 6"—4" C. I. pipe, H. & S.
1—4" gate valve, H. & S.

Overflow:

7' 0"—4" C. I. pipe, H. & S.

492 Item No. 4. The Ada Springs (Exhibit No. 12).

(*a*) Spring No. 12 (Exhibits Nos. 12 & 20).

Area of tract 0.354 acres. Land cleared of brush and dead wood and fenced with woven wire fence. 1 head house. Carried material 400 feet.

Spring purchased in 1910—developed 1912.

Quantities:

(1) Land Improvements:

Clearing 0.354 acres of brush and dead wood.
33 rods woven wire fence.
54 fence posts 8 feet long, chestnut.
300 cu. yds. grading.

(2) Infiltration Lines:

130' 0"—4" tile 10' trench (½ large rocks).
85' 0"—4" " 6' " " " "
153' 0"—4" " 6' " " " "
82 cu. yds. stone hammered to small pieces.

(3) Head House:

Area of floor 23 sq. ft.
Cubic contents, outside dimensions from top of concrete basin to average height of roof 144 cu. ft.
8 cu. yds. excavation (earth).
3.2 cu. yds. concrete in basin.
1—6" x 20" iron strainer over outlet box.
1 Frame superstructure bolted to concrete basin—pine and poplar. Frame of 2" x 4" covered with 1" rough sheeting and weather boarding with trim. Roof, dipped and painted shingles on 1" rough sheeting. 1 door made of 2 layers 1" tongue and groove lumber fitted with 2 strap hinges and Yale lock. Building painted 2 coats outside.

(4) Piping in Head House:

Blow-off (Ave. depth 2 ft.):

4' 6"—6" C. I. pipe H. & S.
8' 0"—6" vit. tile.
1—6" gate valve, H. & S.

Overflow:

12' 0"—4" vit. tile.

493 (*b*) Spring No. 13 (Exhibits Nos. 12 & 20).

Area of tract 0.372 acres. Land cleared of all brush and dead wood and fenced with woven wire fencing. Owing to the character of the ground, a ditch was required on both sides of the spring to carry away the surface water. 1 head house at this spring.
Spring purchased in 1910—developed in 1912.

Quantities.

(1) Land Improvements:

Clearing 0.372 acres of brush and dead wood.
31½ rods woven wire fence.
52 fence posts 8 feet long, chestnut.
600 cu. yds. grading (leveling up).
45 cu. yds. excavating in 300' ditch.

(2) Infiltration Lines:

200' 0"—4" tile in 5' trench (loose rock & earth).
45 cu. yds. stone hammered into small pieces.

(3) Head House:

Area of floor 23 sq. ft.
Cubic contents, outside dimensions from top of concrete basin to average height of roof 150 cu. ft.
6.5 cu. yds. excavation (earth).
3.3 " " concrete in basin.
1—5" x 20" iron screen over outlet box.
1 Frame superstructure bolted to concrete basin—pine and poplar. Frame 2 x 4's covered with 1" rough sheeting and weather boarding with trim. Roof, dipped and painted shingles on 1" rough sheeting. 1 door made of 2 layers 1" tongue and groove lumber fitted with 2 strap hinges and a Yale lock. Building painted 2 coats outside.

494 (4) Piping in Head House.

Blow-off:

3' 6"—4" C. I. pipe H. & S.
30' 0"—4" vit. tile.
1—4" gate valve, H. & S.

Overflow:

7' 0"—4" vit. tile.

(c) Spring No. 14 (Exhibits Nos. 12 & 20)

Area of tract 0.509 acres. Land cleared of all brush and dead wood and surrounded with a woven wire fence. This tract extends across the county road and ditches were dug to lead the run-off water away from the spring. A large amount of grading was required on this tract. 1 Head house at this place.
Spring purchased in 1910—developed in 1912.

Quantities:

(1) Land Improvements:

Clearing 0.509 acres of brush and dead wood.
65 rods woven wire fence.
110 fence posts—8 feet long. chestnut.
1,500 cu. yds. grading around head house.
600 " " " at road.

(2) Infiltration Lines:

93' 0"—4" vit. tile—5' trench (earth & boulders).
95' 0"—4" " " —5' " (rock).
350' 0"—3" C. I. pipe, H. & S.
42 cu. yds. stone hammered to small pieces.

495 (3) Head House:

Area of floor 25 sq. ft.
Cubic contents, outside dimensions from top of concrete basin to average height of roof 176 cu. ft.

11 cu. yds. excavation (earth).
3½ " " concrete in basin.
1—5" x 20" iron screen over outlet box.

1 Frame superstructure bolted to concrete basin—pine anl poplar Frame work 2 x 4's covered with 1" rough sheeting and weather boarding with trim. Roof, dipped and painted shingles, laid on 1" rough sheeting. 1 door made of 2 layers 1" tongue and groove lumber, fitted with 2 strap hinges and Yale lock. Building painted 2 coats outside.

(4) Piping in Head House:

Blow-off (Ave. depth 2 ft.):

9' 0"—4" C. I. pipe, H. & S.
1 —4" gate valve, H. & S.

Overflow:

9' 0"—4" vit. tile.

(*d*) Spring No. 15 (Exhibit No. 12).

This spring is located on the "Henry Bailey" farm. The water comes out of the ground and flows for a short distance on the surface then disappears and comes out in the "Ada' Spring (No. 21). The sink hole has been fenced with a woven wire fence and a ditch has been dug to care for surface drainage. No clearing has been done.

496 Quantities:

24 rods woven wire fence.
40 fence posts 8 feet long (locust).
85 cu. yds. excavation in 380 lin. ft. of ditch.

(e) Spring No. 16 (Exhibits Nos. 12 & 21):

Area of tract 1.058 acres. Land cleared of all brush and dead wood and fenced with a woven wire fence. 1—Concrete head house with a reinforced concrete roof and steel door. Carried material 500 feet.

Spring purchased in 1910—developed in 1912.

Quantities:

(1) Land Improvements:

Clearing 1.058 acres of brush and dead wood.
53½ rods woven wire fence.
88 fence posts 8 feet long, chestnut.
20 cu. yds. grading.

(2) Infiltration Lines:

525' 0"—4" tile, 4' trench (1/3 rock).
117 cu. yds. rock hammered to small pieces.

(3) Head House:

Area of floor 9 sq. ft.
Cubic contents, outside dimensions from bottom of foundation to average height of roof 143 cu. ft.
4 cu. yds. excavation (earth).
2.9 cu. yds. concrete in basin and walls.
0.3 " " reinforced concrete roof slab 4" thick.
150 lbs. ¾" round rods.
1 iron door and frame approx. wt. 90 lbs.
1—5½" x 14" iron screen over outlet box.
1—Hasp and padlock.

497 (4) Piping in head house:

Blow-off:

11' 6"—4" C. I. pipe, H. & S.
1—4" gate Valve, H. & S.

Overflow:

2' 0"—4" vit. tile.

(*f*) Spring No. 17 (Exhibits Nos. 12 & 21).

Area of tract 1.99 acres. Land cleared of brush and dead wood and surrounded by a woven wire fence. 1 Concrete head house at this spring. Carried material 600 feet.
Spring purchased in 1910—developed in 1912.

Quantities:

(1) Land Improvements:

Clearing 1.99 acres of brush and dead wood.
99 rods woven wire fence.
165 fence posts 8 feet long, chestnut.
30 cu. yds. grading.

(2) Infiltration Lines:

440′ 0″—4″ vit. tile 4′ trench (loose rock).
180′ 0″—4″ C. I. pipe H. & S. 4′ trench (loose rock).
98 cu. yds. rock hammered into small pieces.

(3) Head House:

Area of floor 8½ sq. ft.
Cubic content, outside dimensions from bottom of foundation to average height of roof 147 cu. ft.
4 cu. yds. excavation (earth).
2.9 cu. yds. concrete in basin and walls.
0.5 " " " " reinforced roof slab.
180 lbs. ¾″ round rods.
1—iron door and frame—approx. wt. 90 lbs.
1—5″ x 18″ iron screen on outlet box.
1—Hasp and padlock.

498 Quantities:

(4) Piping in head house:

Blow-off (Ave. depth 2′):

17′ 0″—4″ C. I. pipe, H. & S.
1—4″ gate valve, H. & S.

Overflow:

4′ 0″—4″ vit. tile.

(*g*) Spring No. 18 (Exhibits Nos. 12 & 21).

Area of tract 44.99 acres. Approx. 15 acres cleared of brush and dead wood. The tract is partly fenced and contains two concrete head houses. The material had to be carried 800 feet for both houses over a very rocky piece of hillside.
Spring purchased in 1910—developed in 1912.

Quantities:

Clearing 15 acres of brush and dead wood.
255 rods woven wire fence.
420 fence posts 8 ft. long, chestnut.
900 cu. yds. grading.

East Spring (No. 18 A):

(1) Infiltration Lines:

125′ 0″—4″ vit. tile, 5′ trench (rock).
28 cu. yds. rock hammered into small pieces.

(2) Head House:

Area of floor 8 sq. ft.
Cubic contents, outside dimensions from bottom of foundation to average height of roof 131 cu. ft.
2½ cu. yds. excavation (earth).
3 " " concrete in basin and walls.
½ " " " " reinforced roof slab.
140 lbs. ¾″ round rods.
1—iron door and frame, approx. wt. 80 lbs.
1—6½″ x 21″ iron screen over outlet box.
1—Hasp and padlock.

499 (3) Piping in head house:

Blow-off:

12′ 0″—4″ C. I. pipe, H. & S.
1 —4″ gate valve, H. & S.

Overflow.

9′ 0″—6″ C. I. pipe, H. & S.

West Spring (No. 18 B):

(1) Infiltration Lines:

71′ 0″—4″ vit. tile pipe in 5′ trench (rock).
53′ 0″—4″ " " " " 6′ " (½ rock).
200′ 0″—4″ " " " " 10′ " (¾ rock).
200′ 0″—4″ " " " double line in 100′ trench 6′ deep (loose rock).
1,300′ 0″—4″ " " " in 5′ trench (½ rock).
385 cu. yds. rock hammered to small pieces.

(2) Head House:

Area of floor 34 sq. ft.
Cubic contents, outside dimensions from bottom of foundations to average height of roof 485 cu. ft.
7 cu. yds. excavation (earth).
6.5 " " concrete in basin and walls.
1.1 " " reinforced concrete in roof slab.
400 lbs. ¾" round rods.
1—iron door and frame—approx. wt. 160 lbs.
1—7" x 32" iron screen over outlet box.
1—Hasp and padlock.

(3) Piping in Head House:

Blow-off:

5' 0"—8" C. I. pipe, H. & S.
17' 6"—8" vit. tile pipe.
1—8" gate valve.

Overflow:

9' 6"—6" C. I. pipe, H. & S.

500 (*h*) Spring No. 20 (Exhibit No. 12).

Area of tract 0.0578 acres. This spring is located in a pasture and was abondoned after the basin was partially built.

Quantities:

4½ Cu. yds. excavation (earth).
2.4 " " concrete in basin.
1 iron screen 8" x 16" over outlet box.
40' 0"—4" vit. title in 4' trench (earth).

(*i*) Spring No. 21, Ada Spring (Exhibits Nos. 12-22-23*a*-23*b* & 24).

This spring appeared out of the side of a cliff in many small springs which flowed into a swampy hole. The hole was cleared of all muck and the earth removed down to shale. A concrete retaining wall with a spillway was placed on the lower side of the hole and the space behind filled to a depth of 5' with small pieces of rock, which was covered with a foot of shale and a foot of earth and sod. On the cliff side of this basin another retaining wall was built in which 2 pieces of 10" C. I. pipe were placed. When the flow of the springs is too heavy for the filter bed, the excess water either flows over the spillway of the basin or passes out of a concrete cut-off wall at the spring through 3—12" vitrified tile pipe lines. The head house is an elaborate octagonal building with a basin made of concrete surmounted by a shingle roof supported on iron columns and enclosed with heavy wire netting.

501 The spring and filter are enclosed within a woven wire fence and the head house surrounded by evergreen trees. Ditches were built to care for the overflow and surface water. Spring purchased in 1900—developed in 1906-7.

Quantities:

(1) Fencing:

30 rods woven wire fence.
63 fence posts 8 feet long, chestnut.

(2) Basin:

163 cu. yds. excavation (earth).
163 " " " (stone-large boulders).
870 " " " (shale) on hillside.
500 " " " (stone) " "
44½ " " concrete in retaining walls & aprons.
1,630 " " stone hammered to small pieces.
326 " " excavated shale replaced.
326 " " earth replaced.
8,800 sq. ft. sod.
4' 0"—10" C. I. pipe.
12' 0"—12" vit. tile.

(3) Outlet Box from Basin:

3.8 cu. yds. concrete in walls and bottom.
10 bd. ft. in 1—4 x 4 split diagonally (held in corners of box by nails sticking into concrete).
44 lbs. ½" round rods 4' 8" long, 14 in number.
31½ sq. ft. screen 4' 6" x 7' 0"—¼" mesh.
50 bd. ft. 2" oak in cover.
28 lin. ft. 2" quarter round pine.
2 strap hinges.
1 hasp and padlock.

(4) Spring House:

37 cu. yds. excavation.
46 " " concrete.
64 lin. ft. 2" W. I. pipe in posts.
64 " " 1½" " " " "
88 lbs. C. I. in 8 column plates.
320 " ¾" round rods in uprights.

502

16—⅝" round rods 8 ft. long with rings at ends and turnbuckle—approx. wt. 140 lb.
8—cleavises.
56 lin. ft. woven wire net 56" high, made of ⅛" round wire with 1" mesh and ¼" round rods at edges.

1 door and frame 19″ x 20″ made of 1″ x 3/16″ iron riveted and welded with door panel of wire net.
2—12″ x 27″ iron strainers over outlet box.
1—padlock.
600 bd. ft. pine lumber in roof framing d 4 s.
300 " " 1″ sheeting on roof.
230 " " beaded pine ceiling laid in octagon.
70 lin. ft. 3″ x 1″ moulding.
75 " " 2″ moulding.
11 sq. yds. shingles—dipped and painted.

Painting:

All wood and metal above the concrete basin painted two coats.

(5) Piping at Spring House:

Basin to Spring House:

16′ 0″—18″ vit. tile 4′ trench.

In Spring House:

27′ 0″—18″ vit. tile.
1—18″ " " tee.

Caps over 18″ pipes:

2—circular covers, 24″ diameter, made of 2 layers 1″ board with an iron ring 24″ in outside diameter. Ring of 2″ x 3/8″ iron with 12—½″ holes. Each cover held by 12—3/8″ bolts 12″ long embedded in the concrete walls of the basin.

503 (6) Miscellaneous:

181 lin. ft. rough stone wall 4′ high—no mortar.
220 cu. yds. excavation in ditches.
150′ — 2″ W. I. pipe.
43′ —¾″ " " "
17′ —¼″ " " "
1 —bibb cock.
1 —2″—1″ reducer.
1 —1″ globe valve.
13 —evergreen trees set out.
100 —poplar trees " "

(j) Springs No. 22 (Exhibits Nos. 12 & 20).

Area of tract 0.46 acres. Land graded up and the East River moved for 500 feet of its length. 1 frame head house on concrete basin with a concrete retaining wall behind it. A rough uncemented stone wall was placed along the river opposite the head house.
Spring purchased in 1907—developed in 1907.

Quantities.

(1) Land Improvements:

450 cu. yds. grading.
600 " " excavation in new river bed.
100 lin. ft. of loose stone wall 3' high.

(2) Infiltration Lines:

8 cu. yds. concrete cut-off wall 4' high 1' 0" B thick.
2' 0"—8" vit. tile.

(3) Head House:

Area of floor 33 sq. ft.
Cubic contents, outside dimensions from top of concrete basin to average height of roof 232 cu. ft.
504 7 cu. yds. excavation (earth).
3.2 " concrete in basin.
1—5" x 25" iron screen over outlet box.
1—Frame superstructure bolted to concrete basin—pine and poplar. Frame of 2 x 4s covered with 1" rough sheeting and weather boarding with trim. Roof, dipped and painted shingles laid on 1" rough sheeting. 1 door of 2 layers 1" tongue and groove lumber fitted with 2 strap hinges and a padlock. Building painted 2 coats outside.

(4) Piping in Head House:

Blow-Off:

4' 0"—8" C. I. pipe, H. & S.
10' 0"—8" vit. tile.

Overflow:

38' 0"—6" vit. tile.

Item No. 5. Jarrell Spring, Spring No. 19 (Exhibit No. 25).

This spring is located on an uncleared and unfenced tract of land, 1 acre in extent. No development has been done.

Item No. 6. Beaver Pond Spring, Spring No. 23 (Exhibits Nos. 12-26 & 55).

Area of tract 1 acre. No clearing was required at this spring.

Quantities:

(1) Land Improvements:

47 rods woven wire fence.
94 fence posts 8′ long—chestnut.
300 bd. ft. lumber in 150′—3 board fence.
230 lin. ft. rip rap stone wall, 3′ high.

505 Item No. 7. Reservoir and Dam (Exhibit No. 27).

The reservoir was built to retain the excess water flowing from the Ada Spring during the wet season and save it for times when the demand would exceed the flow of the spring. The valley through which the pipe line runs from the spring to the pumping station was dammed with a stone and timber dam and the basin above cleared of all surface soil.

The dam is 150 feet long by 30 feet high in the center. It is built of large logs laid in 10′ x 10′ cribs securely spiked and bolted together. The upper face is covered with two layers of 2″ plank against which earth has been banked. There is a 20 ft. spillway made of plank set two feet below the level of the top of the dam. The cribbing is filled with loose stone and slate. A 36″ C. I. blow-off pipe is placed through the dam.

In the construction of the reservoir, it was necessary to relocate the road and ditch along the side of the hill to intercept run off water as well as carry the surface drainage from the valley above the reservoir.

The dam and reservoir were built in 1902 and abandoned in 1909. It is now in bad repair.

Item No. 8. Pipe Line from Gravity Springs to City (Exhibits Nos. 29 & 28).

This line of pipe begins at Adams Street near Jefferson Street and runs through a ravine to a point north of Fairmont Street where it forks. One branch leads to Spring No. 1, one to Spring No. 2 and the other runs east along the Cumberland Gap Road and up
506 the side of East River Mountain to Spring No. 11. This latter branch acts as a collecting main for Springs Nos. 3 to 10 inclusive, which are connected to it by short lines running down from the Spring houses.

More or less difficulty was encountered in the laying of these lines due to rock and shale in the trenches. Hauling and distributing the pipe was *was* a large item on these lines, as the main road is extremely rough and rocky with excessive grades which limit an average wagon load to 2,000 lbs. Most of the pipe for the lateral branches, which run up the mountainside, were even more difficult to distribute, a great deal of it having to be carried by hand.

(*a*) Cast Iron Pipe.

12,133 lin. ft. 6″ C. I. pipe Class B.
10,336 " " 4″ " " " "
3,652 " " 4″ " " " "
Weight 343.8 tons.

NOTE.—1,910 lin. ft. of 3″ and 2,300 lin. ft. of 4″ are relaid pipe.

Cast Iron Specials on the Above Pipe:

1—6″ x 6″ x 6″ tee.
6—6″ x 6″ x 6″ Y-branches.
7—4″ x 4″ x 4″ "
4—6″ to 4″ reducers.
6—4″ to 3″ "
2—6″ sleeves.
11—4″ "
8—3″ "
Weight of above specials 3,787 lbs.

Valves:

4—6″ Double Gate Valves.
13—4″ " " "
4—4″ Check valves.

507 (*b*) Laying the Pipe Lines.

Ordinary trenching including excavation, laying, yarn, lead and backfill. All pipe having 2 ft. of cover.

The excavation was made difficult and expensive by the presence of a great many boulders and thin rock ledges as well as the distance from town at which some of the work was carried on.

12,133 lin. ft. of 6″ pipe.
10,336 " " 4″ "
3,652 " " 3″ "

(*c*) Extra for Unusual Excavation.

Over and above the cost of ordinary trenching.

Solid Rock Trenches:

The trenches lie through solid limestone which is very hard and brittle, making drilling and blasting expensive. The strata lie in an almost vertical plane.

708 cu. yds. rock excavation.

Shale Trenches.

The shale is extremely tough and lying in a nearly vertical plane it is impossible to blast while picking is very slow work.

1,530 lin. ft. shale trench.

Item No. 9. Pipe Line from Ada Springs to City (Exhibits Nos. 12, 28 & 30).

The pipe included in this item consists of the lines from the springs to the road, the gathering line along the road, the line to the Ada Pumping Station and the force main from the station to the city at Market Street.

The pipes for the Spring lines run up the side of the mountain and were extremely hard to distribute, while the excavation was through rock and large boulders for a great part of the way.
508 The gathering line along the road was about half in rock.
The line from the Spring to the Ada Station was the most expensive piece of construction on the entire system. This pipe follows a ravine from the Ada Spring to the railroad. As a creek also runs in this ravine, a great deal of water worked into the trenches. The first half of the line lies through shale and the remainder through solid rock. Distributing the pipe entered into the extra cost as it had to be hauled from Ada over a rough and rocky path; a road was even built for a large part of the distance. From the railroad to the Pumping Station the line follows the East River and the tracks. It crossed the river 8 times and under the railroad twice—both of these latter crossings are through long masonry culverts 25 ft. wide by 100 ft. long. A great deal of rock and water was also encountered on this line. For a distance of 700 feet the pipe lies along a steep hillside. Here it was necessary to pull the pipe up from the creek bed by ropes, the slopes being so steep that a person could walk only with difficulty. The force main to the City parallels the railroad and follows up the East river. Little rock was encountered and only a few wet spots.

(*a*) Cast Iron Pipe.

11,400	lin.	ft.	10″	C.	I.	pipe	@	63.8	lbs. per ft.
2,570	"	"	10″	"	"		@	76.7	" " "
7,600	"	"	10″	"	"		@	88.5	" " "
9,401	"	"	8″	"	"		@	47.5	" " "
2,943	"	"	6″	"	"		@	33.3	" " "
2,055	"	"	4″	"	"		@	21.7	" " "
7,094	"	"	3″	"	"		@	16.2	" " "

Weight of the above pipe 1,150.4 tons.

NOTE.—6,864 lin. ft. of 3″ and 2,055 lin. ft. of 4″ pipe in the above are relaid pipe.

509 Cast Iron Specials:

1—10″ x 10″ x 10″ Y—Branch.
2—10″ x 10″ x 6″ "
2— 8″ x 8″ x 8″ "
3— 8″ x 8″ x 6″ "
1— 8″ x 8″ x 4″ "
1— 6″ x 6″ x 6″ "
2— 4″ x 4″ x 4″ "

5—10″ x 10″ x 6″ tees.
1— 6″ x 6″ x 6″ "
2— 4″ x 4″ x 4″ "

2—10″—90° bends.
5—10″—45° "
3— 6″— " "
2— 4″— " "
9— 3″— " "
1—10″—22½° "

74— 3″ sleeves.
8— 4″ "
3— 6″ "
4— 8″ "
2—10″ "

1—10″ to 8″ reducer.
7— 6″ to 4″ "
6— 4″ to 3″ "

Weight of above specials 13,334 lbs.

Valves:

8— 4″ Double Gate Valves.
9— 6″ " " "
1— 8″ " " "
1—10″ " " "
1— 6″ Horizontal Check Valve.
2—10″ " " "

(*b*) Laying Pipe Line.

Ordinary trenching including excavation, laying yarn, lead and backfill. All pipe having 2 ft. of cover.

21,570 lin. ft. 10″ pipe.
9,401 " " 8″ "
2,943 " " 6″ "
2,055 " " 4″ "
7,094 " " 3″ "

43,063 lin. ft. cast iron pipe in place.

510 (c) Extra for Unusual Excavation.

Over and above the cost of ordinary trenching.

Rock Trenches:

These trenches lie through solid limestone ledges which have been turned so that their stratification lies almost vertically.

3,065 cu. yds. rock excavation.

Shale Trenches:

The shale encountered was very difficult to excavate owing to its lying in vertical planes and having to be picked out. Most of the shale trenches were more or less wet.

4,200 lin. ft. shale trenches.

Wet Trenches:

Constant pumping or bailing required.

6,400 lin. ft. wet trenches.

Steep Hillside Trench:

700 lin. ft. trench.

(d) Miscellaneous Crossings.

6 stream crossings—river averages 10 ft. wide by 1½ ft. deep. 3 of these crossings are in rock and 1 in hard, blue shale.

River and Railroad Crossings:

Where the pipe passes through the railroad fill, it lies, along with the river, in a masonry culvert 25 feet in width and 100 feet long. The excavation is through solid rock. Small shots had to be used in order to prevent damage being done to the culvert while the water of the river was a serious item to content with.

2 of the above crossings.

511 Item No. 10. Pipe Line from Beaver Pond to City (Exhibit No. 12).

This line begins at Walton Street and runs to the Beaver Pond Pumping Station which is located at Spring No. 23. The pipe line runs through the fields under 2 feet of cover.

(*a*) Cast Iron Pipe.

1,740 lin. ft. 10″ C. I. pipe @ 56 lbs. per ft.
1,700 " " 10″ " " @ 60 " " "

Total weight 99.7 tons.

(*b*) Laying the Pipe Line.

Ordinary trenching including excavation, laying, yarn, lead and backfill. All pipe under 2 feet of cover. This pipe line lies through fields which are accessible with teams and light loads.

Laying 3,440 lin. ft. C. I. pipe.

(*c*) Extra for Unusual Excavation.

Over and above the cost of ordinary trenching Solid Rock.
Two ledges of solid limestone were encountered which were extremely hard.
155 cu. yds. rock excavation.

511*a* *The Pumping Stations.*

511*b* The Ada Pumping Station.

512 Item No. 11. The Ada Station Building (Exhibits Nos. 31-38 incl.):

(*a*) The Building.

The original pumping station was built in 1900 and consisted of a rough frame structure 25′ x 35′ x 10′ with an asbestos paper roof, housing two boilers and a Worthington duplex pump of 1.5 million gallon capacity.

In 1906 the present station was erected around the old, and all but the pumping engine of the former station removed. The new station is of concrete block construction laid in Portland cement mortar, resting on a concrete foundation. The roof is of tile supported on 2″ sheathing laid upon steel trusses. Space had to be blasted out of the rock to make room for the station. About one-third of the building sits on this rock ledge while the remainder is on deep foundations passing through clay and muck deposited by the East River Branch of New River. Bracing was required for all of the trench excavation. The floor of the present station was placed 4 feet higher than the old one and the station grounds brought up to this grade.

Cubical contents, outside dimensions from average bottom of footings to average height of roof—223,500 cu. ft.

513 (1) Excavation:

Rock on ledge included in station ground improvements.
North Wall—none.

East wall	(0′ 14′ deep)	40	cu. yds.	bracing required.
South "	(8′ 14′ ")	216	"	" "
West "	(0′ 8′ ")	28	"	" "
Partition wall	(0′ 11′ ")	47	"	" "
Coal bin partition	none	0		
Tool room partition	none	0		
Total		331	cu. yds.	" "

(2) Foundations to Floor Line:

264 cu. yds. concrete.

(3) Walls:

The walls are made of two rows of cement blocks outside rock faced, inside smooth, set in red Portland cement mortar with the following exceptions.

Concrete wall 5′ 6″ high along north wall of pump room.
" " 6′ 8″ " " " " " tool "
" " 6′ 8″ " " " " " coal bins.
" " 6′ 8″ " " east " " tool room.
" " 6′ 8″ " " " " " coal bin.*
" " 7′ 4″ " " south " " " "
15″ brick wall on boiler room partition in ventilator.
Openings included in outside walls.
76 cu. yds. concrete in walls (2′ thick).
2,900 common brick (red) set in Portland cement mortar.
4,138 sq. ft. of 15″ cement block wall, openings included.
4,544 " " 20″ " " " " "
112 " " 10″ " " " " "
130 iron wall stays 2½″ x ¼″ x 10″

(4) Structural Steel in Roof Trusses:

5 Pratt trusses 51′ 5″ span. 13′ 0″ high with ventilator and lateral bracing.
514 Total weight—52,000 lbs.

(5) Lumber in Roof and Ventilator:

14,089 bd. ft. poplar in joists, purlins & framing.
14,750 bd. ft. No. 1 common dressed poplar in sheathing.
1,243 bd. ft. #1 poplar—dressed—in ventilator.
1,430 bd. ft. 3″ x 6″ #1 poplar in Jack rafters.
1,120 lin. ft. 2½″ x 3″ poplar moulding.

*This wall is faced on the outside with one row of cement blocks.

(6) Roofing and Gutters:

6,420 sq. ft. 6½″ x 13″ x ½″ flat tile roofing with copper nails.
113 lin. ft. fancy tile ridge row.
1,050 sq. ft. galv. iron gutter and flashing.
320 bd. ft. #1 poplar in gutter.

(7) Downspouts:

154 lin. ft. 4″ corrugated downspouts 20 90° bends.

(8) Painting:

All exterior wood and metal work painted two coats.

(*b*) Engine Room.

Area of floor—2,940 sq. ft.

(1) Floor:

2,000 sq. ft. of 8″ concrete floor laid on 18″ of cinders.
1½″ top coat of 1:2 Portland cement sand.
6½″ base of 1:3:5 Portland cement, sand and stone.

(2) Interior Trim:

Oak wainscoting 6′ 0″ high, 216 lin. ft. containing:
1,950 bd. ft. dressed oak lumber.
216 lin. ft. 1 x 5 cap with 1 edge rounded.
216 " 2″ x 2″ moulding.

515 (3) Doors and Windows:

Window sashes and outside of frame white pine, inside of frame, oak. Doors, oak inside finish, frames white pine.

1 pair outside sliding doors 10′ x 14′ with 20 10″ x 15″ lights 1⅜″ sash in top of each piece door, one piece door has wicket door hung with hinges 2′ 10″ x 5′ 2″. This pair of doors shows segmental top outside (rad. 10′ 0″) and square inside, and is hung on McCabe door hangers.

1 inside door and frame 3′ 4″ x 10′ 0″ to segment (rad. 3′ 4″) with 10″ x 15″ C light pivot transom. Size of door 3′ 0″ x 6′ 6″.

1 Inside door and frame 3′ 4″ x 7′ 4″ to segment (rad. 3′ 4″).

4 twin windows, frames, weights and cords for 15″ wall. Top sashes segmental (radius 6′ 9″). Opening 6′ 9″ x 10′ 0″. 4 sashes of 12—10″ x 15″ lights each.

2 twin windows, frames, weights and cords for 20″ wall. Top sashes segmental (radius 6′ 9″) 10″ x 15″ lights each.

1 twin window, frame, weights and cords for 20″ wall. Opening 5′ 4″ x 6′ 9″. 2 sashes rabbetted to pivots—segmental top (rad. 6′ 9″) with 12—10″ x 15″ lights each.

1 single window and frame—fixed for 20″ wall. Opening 5′ 4″ x 4′ 1″. Segmental top (rad. 4′ 1″) 1 sash with 16—10″ x 15″ lights.

(4) Painting and Varnishing:

Inside walls painted two coats white and the joints between the blocks outlined in red.

Roof truss and underside of sheeting painted two coats graphite paint.

5,100 sq. ft. wall painted 2 coats.
3,700 sq. ft. roof sheeting painted 2 coats.

516 Woodwork filled and varnished with two coats varnish.

(c) Boiler Room.

Area of floor—1,310 sq. ft.

(1) Floor:

750 sq. ft. of 8″ concrete floor laid on.
18″ of cinders.
1½″ top coat of 1:2 Portland cement & sand.
6½″ base of 1:3:5 " " sand & stone.

(2) Doors and Windows:

All frames and sashes of white pine.

1 pair outside sliding doors 10′ x 14′ with 20—10″ x 15″ lights, 1¾″ sashes in the top of each piece door. One door has wicket door hung with hinges 2′ 10″ x 5′ 2″. This pair of doors shows segmental top outside (rad. 10′ 0″) and square inside, and is hung on McCabe door hangers.

3 twin windows; frames, weights and cords for 15″ wall. Top sashes segmental (rad. 6′ 9″). Opening 6′ 9″ x 10′ 0″. 4 sashes of 12—10″ x 15″ lights, each.

1 twin window; frame, weights and cords for 20″ wall. Top sashes segmental (rad. 6′ 9″). Opening 6′ 9″ x 10′ 0″. 4 sashes of 12—10″ x 15″ lights.

3 twin windows and frames for 20″ wall. 2 sashes rabbetted to pivots. Segmental top. (radius 6′ 9″) with 12—10″ x 15″ lights sashes. Opening 5′ 4″ x 6′ 9″.

5 single windows and frames for 15″ wall. Sash rabbetted to pivots, segmental top (rad. 4′ 1″) 8—10″ x 15″ lights. Opening 2′ 9″ x 4′ 1″.

517 (3) Painting:

Roof trusses painted two coats graphite paint.
Window frames and doors unpainted.

(4) Miscellaneous:

4—3″ x 3″ x 4.8# —3′ 6″ long angles bolted to coal bin opening—Wt. 67 lbs.

(*d*) Coal Bin.

Cubical contents—net—6,250 cu. ft.
Area of floor—500 sq. ft.

(1) Floor:

500 sq. ft. 8″ concrete floor.
1½″ top coat of 1:2 Portland cement & sand.
6½″ base " 1:3:5 " " sand and rock.

(2) Roof:

2—6″—12.25# I beams 18′ long.
5—5″ x 3″ x 8.2# angles, 36′ 7″ long.
8—6″ x 6″ x 14.9# " 0′ 8″ "

Total weight of steel = 2,000 lbs.

680 bd. ft. 1″ sheathing, poplar.
35½ lin. ft. 10″ x ⅞″ dressed poplar trim.
35½ " 2″ x 2″ moulding.
35½ " 4″ x 1″ cap.
76 squares tar paper.

(3) Painting:

Trim on roof painted two coats.

(*e*) Tool Room.

Cubic contents—net—1,400 cu. ft.
Area of floor—112 sq. ft.

(1) Floor:

112 sq. ft. 8″ concrete floor.
1½″ top coat of 1:2 Portland cement and sand.
6½″ base of 1:3:5 " " sand and stone.

518 (2) Roof:

5—5″ x 3″ x 8.2# angles 8′ 3″ long, weight 340 lbs.
157 bd. ft. 1″ sheathing, poplar.
8¼ lin. ft. 10″ x ⅞″ dressed poplar trim.
8¼ " 2″ x 2″ moulding.
17½ sq. yds. tar paper.

(3) Shelving:

104 bd. ft. ⅞″ dressed poplar shelving.

(4) Painting:

Shelving and trim on roof painted two coats.
Concrete walls painted two coats.
Door and window frame filled and varnished.
750 sq. ft. walls & shelves painted two coats.

Item No. 12. Steel Stack (Exhibit- No-. 32-36-37 & 39).

The stack is of the self-supporting type set on a massive concrete foundation. It is 4′ 0″ in inside diameter and lined to the top with fire brick. The excavation was carried down to rock (16 feet) through muck.

(*a*) Excavation.

187 cu. yds. of muck excavation 16 ft. deep bracing required.

(*b*) Foundation.

90 cu. yds. mass concrete containing large boulders.
41 cu. yds. concrete (forms required).
2,700 fire brick.
2 tons fire clay.
1—C. I. clean-out door and frame, 20″ x 30″ opening. Approximate weight 400 lbs.
1—C. I. chimney pit cover and frame, 3′ 10½″ x 4′ 10½″ opening. Approximate weight 770 lbs.

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(*c*) Stack.

1 steel stack 100′ 0″ high x 4′ 0″ diameter. Steel plates are under the following specifications: Open hearth steel, ultimate tensile strength 55,000 to 65,000 lbs. per square inch, elastic limit not less than ½ the ultimate strength. Minimum elongation 25% in 8 inches, phosphorus not to exceed 0.06% and sulphur not to exceed 0.04%. Test pieces shall bend flat on themselves without sign of fracture either when bent cold or after being heated to cherry red and plunged into water at 80° F.

Cast iron—neutral, soft, tough gray iron.

Total weight of steel in stack	21,500	lbs.
Weight of C. I. base & 6 anchor plates	7,500	"
" " 6 anchor bolts	550	"

9,500 circle fire brick in lining.
1,400 common red brick in lining.
2 tons of fire clay in lining.

Item No. 13. Coal Chute (Exhibits Nos. 32 & 37).

The coal chute is a concrete structure consisting of a hopper under a switch track of the railroad and an enclosed chute to the coal bin through which the coal is delivered by gravity. No excavation was required. The roof of the chute is reinforced with 1¼" rods and two layers wire fencing.

Quantities:

62 cu. yds. concrete in walls and roof.
2,004 lbs. 1¼ round rods (35—14 ft. long) in roof.
127 sq. yds. woven wire fence in roof.

Item No. 14. Oil House (Exhibit No. 40).

Made of concrete blocks laid in red Portland cement mortar 1:3 with reinforced concrete roof. Built in 1907.
520 Cubic contents from bottom of footings to average height of roof, outside dimensions—611 cu. ft.
Area of floor—61 sq. ft.

(*a*) Foundation.

3 cu. yds. concrete.

(*b*) Walls.

213 sq. ft. 8" concrete block wall.
1/3 cu. yds. concrete in end walls.

(*c*) Roof.

2.7 cu. yds. reinforced concrete arch roof 8" thick.
383 lbs. ¾" round rods.
270 sq. ft. woven wire fencing.

(*d*) Floor.

Cinders.

(*e*) Door.

1 3′ 0" x 7′ 0" door and frame 3′ 4" x 7′ 4" Top to segment. Door oak finished on one side. (Same as inside door in pumping station.) Unpainted.

Item No. 15. The Worthington Pump (Exhibit No. 41).

(*a*) Pumping Engine.

1 Worthington double acting horizontal duplex pumping engine of 1.5 million gallon capacity.

Diameter of steam cylinders—20 inches.
" " plungers 15 "
Length of stroke 10¼ "
Built in 1900.
This pump is not operated any more but is kept only for emergency use.

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(*b*) Foundation.

10 cu. yds. excavation—earth.
8 " " stone masonry laid in Portland cement.
1—4′ 3″ x 9′ 10″ x ½″ iron plate bolted on top of foundation with 4—1″ anchor bolts 4′ long. Approximate weight of plate—850 lbs.

(*c*) Concrete Pit.

4 ft. deep with 10″ walls on three sides.
One end is formed by building foundation while the other contains 4 concrete steps.
10½ cu. yds. concrete including 4 steps.

(*d*) Suction and Discharge Piping.

8 1/3 ft. 10″ W. I. screw pipe.
2—10″ ex. heavy fl. coupling.
7 ft. 8″ " " W. I. screw pipe.
2—8″ ex. heavy fl. coupling.

Item No. 16. The Snow Pump (Exhibits Nos. 32 & 42).

(*a*) Pumping Engine.

1 horizontal cross-compound high duty crank and fly-wheel condensing pumping engine of a rated capacity of 1.5 million U. S. gallons of water per 24 hours against a total water pressure including suction lift of 305 lbs. per square inch. The valve motion is of the Corliss type. 4 Single acting outside-packed plungers.

Steam pressure,
Piston speed at rated capacity, 220 ft. or 36 2/3 rev.
Diameter of H. P. steam cylinder, 18 inches.
" " L. P. " " 40 "
" " plungers, 7¾ "
Common stroke, 36 "
Diameter of fly-wheel, 12 feet.
Weight of fly-wheel, 16,000 lbs.
Guaranteed duty, 135 million ft. lbs. per 1,000 lbs. of steam.

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The installation includes the main pumping engine.

522 1 500 sq. ft. surface condenser; 1 6″ x 8″ x 7″ rotary dry vacuum pump. Blake straight line pattern; 1 4½″ x 3¾″ x 4″ duplex wet vacuum pump; 2 air pumps; 4 air chambers; 1 3″ x 2″ x 3″ Duplex jacket pump; 1 reheating receiver, automatic air valves; delivery relief and by-pass valve; and all interior piping, valves and traps for connecting these parts with each other and with the engine inside of their common nozzles. The interior piping includes all piping from and including the throttle valve on the steam end to and including the breeching Y on the suction and discharge end. Gauges, oilers, revolution counters, lubricator and other accessories included with this type of pumping engine are furnished. Erected in 1906.

(*b*) Foundations.

63 cu. yds. rock excavation.
34 " " earth "
114 " " concrete "

(*c*) Suction and Discharge Piping.

6′ 0″—10″ C. I. fl. pipe (ex. heavy)	approx. wt.,	600 lbs.
21′ 6″—12″ " pipe flanged	" "	1,650 "
1—12″ fl. ⅛ bend	" "	238 "
1—12″ " Y	" "	780 "

2—12″ " Eddy gate valves.
1—10″ " gate valve with by-pass attached (Heavy).
1—10″ " check valve (Chapman) with ¾″ pipe by-pass (heavy) made of the following:
2′—¾″ W. I. screw pipe, ex. heavy.
2 —¾″ ells " "
1 —¾″ union " "
1 —¾″ globe valve.

523 Item No. 17. Auxiliaries (Not Included with Pumping Engines). (Exhibit No. 43.)

(*a*) Feed Water Pump.

1 Epping Carpenter #6772 duplex steam pump 5¼″x 3½″ x 5″. This pump takes its suction from the hot water tank.

(*b*) Feed Water Heaters.

(1) Worthington Pump Heater:

Vertical heater 4′ 10″ high and 2′ 8″ in diameter. Supported by three iron legs.

(*a*) Foundation:

2½ cu. yds. excavation.
2— " " concrete.
3—C. I. legs. Approx. weight 135 lbs.

(*b*) Fittings:

2′ 0″—1½″ extra heavy W. I. screw pipe.
1 —1½″ " " tee.
1 —1½″ " " elbow.
1 —1½″—1¼″ bushing.
1 —1½″— ¾″ "
1 — ¾″ brass safety valve.

(2) Secondary Heater:

1 Wheeler feed water heater. This feed water heater is supplied with steam from the exhausts of the auxiliary pumps.

(*c*) Oil Separator and Tank:

1 Cochrane 14″ horizontal vacuum oil separator (Fig. 21 in catalog).
1 steel tank 6′ 6″ long—20″ diameter resting on floor.

Fittings:

3′ 0″—1½″ ex. heavy W. I. screw pipe.
6′ 0″—1″ " " " " "
1 —1½″ " " flanged union,
1 —1″ " " " "
1 —1½″ " " 45° bend.
2 —1″ " " elbows
1 —1½″ gate valve.
1 —1″ " "

524 (*d*) Hot Water Tank.

1 vertical steel tank 8′ 0″ high x 2′ 0″ diameter. All water from steam lines, traps and condensed water pumped by wet vacuum and jacket pumps are collected here, and any deficiency in the amount needed by the boiler feed pump is made up by fresh water added to the tank by means of an automatic regulator.

(*e*) Steam Separator.

1 4″ separator on Snow pump.

Item No. 18. Boiler Plant (Exhibits Nos. 32 & 44).

(*a*) 1 Battery containing two Sterling 148 H. P. boilers. Each boiler has 1,477 sq. ft. of submerged heating surface and 35.7 sq. ft.

of grate surface. Grates are 6′ 6″ deep. One is equipped "Sterling Style A" grate bars and the other with McNaughton rocker grates. There are three steam drums 36″ diameter and 8′ 3″ long and one mud drum 42″ diameter and 6′ 10″ long in each boiler. The thickness of the drum plates are as follows:

Steam drums—tube plates		9/16″
	other "	⅜″
Manhole heads		¾″
Blank heads		½″

The plates are of open hearth flange steel with a tensile strength of 54,000 to 62,000 lbs. per square inch.

Boilers designed for 150# operating pressure and tested to 225# hydrostatic pressure.

Built and erected in 1906.

Fixtures:

Each boiler is furnished with cast iron front with flues, doors, grates, etc. complete. (Note.) One set of grates was replaced by McNaughton rocker grates in 1913.

525 Fittings on Each Boiler (Extra heavy flanged):

1 5″ flanged elbow.
1 12″ diameter steam gauge.
1 ¾″ stop valve on steam hose connection.
2 Consolidated pop safety valves.
1 Reliance water column with water gauge, quick closing valves for shutting off water glass and operated from floor level, 3 gauge cocks with lifting handles, blow-off valve and drain pipe from water column terminating in ash pit, all pipes, fittings and brackets necessary for attaching the column to the boiler.

(*b*) Miscellaneous Piping on Both Boilers.

Water columns, interior feed pipes, etc.

5′ 0″—3″ W. I. screw pipe, extra heavy.
10′ 0″—2½″ " " " " "
19′ 0″—1½″ " " " " "
45′ 0″—¾″ " " " " "
6′ 0″—½″ " " " " "
15′ 0″—¼″ " " " " "
4—1½″ tees " "
2—¾″ " " "
2—¼″ " " "
2—2½″ elbows " "
2—1½″ " " "
12—¾″ " " "
6—¼″ " " "
4—¾″ 45° bends " "
2—¾″ unions " "
2—2½″—1½″ bushing " "
2—1½″—¾″ bushing " "
4—1½″ plugs.
2—1½″ flange unions.
2—¾″ globe valves, Chapman.
4—¾″ " " "
2—¼″ " " "
2—1½″ " " "

(*c*) Boiler Blow-off Pipes for Both Boilers.

Blow-off pipe:

26′ 0″— 3″ W. I. screw pipe, extra heavy.
48′ 0″—2½″ " " " " "
1—3″ tee.
4—2½″ "
7—2½″ elbows.
2—3″—2″ bushings.
2—2½″ blow-off valves.

526 Safety Valve Vent:

76′ 0″—3″ W. I. screw pipe.
4—3″ elbows.

(*d*) Boiler Settings.

The two boilers are built in one setting and supported on steel framework resting on the foundations. The walls are made of hard red brick laid in Portland cement mortar, with a lining of fire brick. These walls do not carry any of the boiler weight.

The setting is securely tied together by the steelwork of the boiler frame and additional tie rods and C. I. stiffeners.

Quantities:

*170 cu. yds. earth excavation in trenches.
*142 " concrete.
61 sq. ft. 8" concrete-floor in ash pit.
49,400 common red brick in Portland cement mortar.
16,300 fire brick.
6 tons fire clay.

(e) Smoke Flue.

Concrete tunnel lined with fire brick lying under floor along south wall of boiler room. Openings to extra boiler foundations bricked.

Quantities:

60 cu. yds. earth excavation.
6.7 cu. yds. concrete in walls and roof.
7,000 fire brick.
1—C. I. clean-out door and frame approximate weight 1,400 lbs.
2—tons fire clay.

527 Item No. 19. All Piping in Station.

(a) Hot Water Pipes.

All pipe to carry feed water from the boiler feed pump and Worthington heater to the boilers. Asbestos covered.

114'—1½" extra heavy W. I. screw pipe (asbestos covered).
74'—2" " " " " " " " "
2—1½" " " tees.
1—2" " " "
9—1½" " " elbows.
12—2" " " "
1—2" " " 45° bend.
2—1½" " " flanged union.
1—2" " " " "
1—2" plug.
2—2"—1½" bushings.
3—1½" globe valves.
1—2" flanged gate valve (all brass).
1—1½" check valve, brass with companion flange.

*Includes foundation for an additional battery of 2—148 H. P. boilers.

(*b*) Miscellaneous Water Pipes.

All station supply water pipe, supply pipe for heaters and fresh water supply for boiler feed tank (hot water tank); also piping to water packets on dry vacuum pump and jacket pump.

59′ 0″—2″ extra heavy W. I. screw pipe.
32′ 0″—1½″ " " " " "
101′ 0″—1″ " " " " "
20′ 0″—½″ " " " " "
4—2″ " " tees.
1—1½″ " " "
8—1″ " " "
2—½″ " " "
5—2″ " " elbows.
2—1½″ " " "
12—1″ " " "
5—½″ " " "
3—2″ " " flanged unions.
2—½″ " " unions.
5—2″ " " 45° bends.
1—2″ " " cross.
1—2″—1¼″ bushing.
1—2″—1″ "
3—1″—½″ "
1—2″ plug.

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4—1″ plug.
2—½″ "
1—2″ check valve.
1—2″ gate "
4—2″ flanged gate valve.
1—1¼″ " " " (brass).
4—1″ globe valves (2 Chapman).
2—½″ " "
1—1½″ flanged globe valve (Chapman outside racked).
1—2″ Foster #56019 flanged pressure regulator.
1—1½″ pressure regulator.
1—2″ plug valve.
1—1″ " "
1—ball cock, box and float.
1—2″ flange relief valve—brass, angle outlet-Lunkenheimer.

(*c*) Steam Piping in Station.

Main Steam Header and Header for Auxiliaries:

Includes all steam piping in the two headers to the connections to the boilers. Asbestos covered.

21′ 0″—8″ Extra heavy W. I. screw pipe (asbestos covered).
12′ 0″—5″ " " " " " " " "
33′ 0″—2″ " " " " " " " "
33′ 8″—1½″ " " " " " " " "
2—8 x 5 " " flanged tees.
1—8 x 2 " " " "
1—8 x 1 " " " "
1—2″ " " tee.
7—1½″ " " "
1—2″ " " elbow.
2—1½″ " " "
3—8″ " " flanged couplings.
2—5″ " " " "
2—1½″ " " " "
1—2″—1½″ bushing.
1—1½″ plug.
4—5″ flanged globe valves.
1—2″ " " " (brass).

Steam Line to Snow Pump:

19′ 0″—4″ Extra heavy W. I. Pipe containing 1 90° bend (asb. cov.)
1—4″ " " flanged couplings.
1—4″ flanged globe valve.

529 Steam Line to Worthington Pump:

15′ 6″— 5″ Extra Heavy W. I. screw pipe.
53′ 0″— 4″ " " " " " " (containing 1 90° bend.)
2 — 5″ " " elbow.
1 — 4″ " " "
1 — 4″ " " flanged elbow.
1 — 5″ " " " unions.
3 — 4″ " " " "
1 — 8″ 4″ reducing flange.
1 — 4″ flanged globe valve— Chapman, outside packed.
1 — 4″ " " " " solid brass.
3′ 6″—¼″ W. I. screw pipe.
2 —¼″ globe valves.
1 — 1 pt. lubricator.

Auxiliary Exhaust Header:

This pipe collects the exhaust steam from the auxiliaries and conducts it to the secondary feed water heater.

25′ 0″—3″ Extra heavy W. I. screw pipe.
17′ 0″—2″ " " " " "
5 —3″ " " tees.
4 —2″ " " "
1 —3″ " " elbow.
1 —3″ " " flanged union.
1 —3″—2″ bushing.
2 —3″ globe valves.

Steam Exhaust & Misc. Piping for Boiler Feed Pump:

2′ 0″—2½″ W. I. screw pipe.
8′ 0″—1¼″ " " " "
16′ 0″— ¾″ " " " " extra heavy.
4′ 0″— ¼″ " " " " " "
2 —1¼″ elbows.
1 —1¼″ flanged union.
1 —2 ″—1¼″ bushing.
2 — ¾″ elbows—extra heavy.
1 — ¾″ flanged coupling.
1 —2½″ gate valve.
1 — ¾″ globe " Chapman.
2 — ¼″ " "
1 — ½ pint lubricator.

Steam Exhaust & Misc. Piping to Wet Vacuum Pump:

22′ 0″—1½″ W. I. screw pipe.
10′ 0″— ¾″ " " "
22′ 0″— ½″ " " " extra heavy.

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2 —1½″ elbows.
1 — ¾″ "
8 — ½″ " extra heavy.
1 —1½″ flanged union.
1 — ¾″ union.
2 — ½″ " extra heavy.
1 — ¼″ flanged coupling extra heavy.
1 — ¾″ tee.
1 — 2″—¾″ bushing.
1 —1½″ check valve.
3 — ½″ globe valves.
1 — ½″ oil cup.

Steam Exhaust & Misc. Piping to Dry Vacuum Pump:

7′ 0″—1¼″ W. I. screw pipe.
13′ 0″—1 ″ “ “ “ extra heavy.
1 —1¼″ elbow.
2 —1 ″ “ extra heavy.
1 —1¼″ flanged coupling.
1 —1 ″ “ “ extra heavy.
1 —3 ″—1¼″ bushing.

Steam Exhaust & Misc. Piping to Jacket Pump:

8′ 0″— 1″ W. I. screw pipe.
33′ 0″—½″ “ “ “ extra heavy.
1 — 1″ elbow.
5 —½″ “ extra heavy.
1 — 1″ union.
1 —½″ “ “ “
2 — 1″ flanged couplings.
1 — 1″ check valve.

Exhaust Piping to Air Pumps:

4′ 0″—1½″ W. I. screw pipe.
9′ 0″—1¼″ “ “ “
1 —1½″ tee.
3 —1¼″ elbows.
1 —2 ″—1½″ bushing.
2 —1½″—1¼″ “

Miscellaneous Steam and Exhaust Piping:

Includes drains from lines, heating coil for oil filter and
531 blow out pipe for oil tank.

15' 0"—1¼" W. I. screw pipe.
65' 0"—1 " " " "
32' 0"— ¾" " " "
0' 6"— ¼" " " "
2 —1¼" tees.
1 —1 " "
1 — ¾" "
1 —1¼" elbow.
4 —1 " "
8 — ¾" "
1 — ¼" "
1 —1¼" union.
3 —1 " flanged unions.
1 —1 " union.
5 — ¾" "
8 —1 " 45° bends.
5 — ¾" 45° "
2 —2½"— 1" bushing.
1 —1¼"—¾" "
1 —1¼"— 1" "
1 —1 "—¾" "
1 — ¾" safety valve.
1 — ¼" pet cock.
2 —1 " globe valves—Chapman.
1 — ¾" " "
1 — ¾" " " —outside packed.
1 —McDaniels Pressure Trap.
1 —#2 Wright " "

Radiator in Engine Room:

400' 0"—1" W. I. screw pipe extra heavy.
19 —1" return bends.
3 —1" tees.
2 —1" elbows.
2 —1" unions.
1 —1½"—1" bushing.
1 —1" globe valve—Chapman, outside packed.
1 —#3 Wright steam trap.
1 —6" Ashcroft steam guage and siphon.

(*d*) Miscellaneous Drain Piping and Vents in Station.

32′ 0″— 8″ W. I. screw pipe.
8′ 0″— 5″ " " "

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28′ 0″— 4″ W. I. screw pipe (in 5′ trench).
55′ 0″— 3″ " " " extra heavy.
10′ 0″— 2″ " " " (in 2′ trench).
20′ 0″— 1″ " " "
20′ 0″—¾″ " " "
25′ 0″—½″ " " "
1 — 5″ elbow.
1 — 4″ "
3 — 3″ " extra heavy.
2 — 2″ "
2 — 1″ "
3 —½″ "
1 — 4″ tee.
2 — 3″ " extra heavy.
2 — 2″ "
2 — 1″ "
1 — 3″ flanged union—extra heavy.
2 — 2″ " "
1 — 1″ " "
1 — 3″ plug.
1 — 2″ "
1 — 4″ 2″ bushing.
1 — 8″ Lyman Iron exhaust head.
1 — 3″ " " " "
1 — 2″ gate valve.
1 — 1″ globe valve.
1 — 8″ McCarthy exhaust relief valve.
28′ 0″— 4″ Vitrified tile.
168′ 0″— 5″ " "
10 — 5″ " " tees.
37′ 0″— 6″ " "

Item No. 20. Piping in Station Yard (Exhibit No. 45).

Pump Suctions:

77′ 0″—10″ C. I. light weight H. & S. Weight 4,850 lbs.
Average cut 4 ft.
1 —10 x 10 x 10 tee.
1 —12 x 12 x 12 Y one branch flanged.
1 —10″ elbow H. & S.
2 —12″—10″ reducer H. & S.
Wt. of above specials 2,000 lbs.
1 —10″ gate valve H. & S.

Pump Discharges:

Extra heavy pipe carrying 305 lb. pressure.

42'—10" C. I. flange pipe weight 4,230 lbs.

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167'—10" C. I. H. & S. pipe, weight 16,920 lbs.
1—10" " flange and bell.
1—10" x 10" x 10" C. I. "Y" branch.
1—10" C. I. flange blank.
1—10" " H. & S. 45° bend.
2—10" " flanged 90° bends.
1— 8" " H. & S. 90° "
1—10"-8" C. I. H. & S. reducer.
1—10" " " tee.
1—10" x 10" x 10" C. I. H. & S. "Y" branch.
1 air chamber {1—10"-20" flanged increaser ex. heavy.
13' 0"-20" " pipe " "
1—20" " cap " "
Weight of above specials—9,220 lbs.
2—10" gate valves, Eddy.

Connection from Spring #22:

101' 0"—6" C. I. pipe H. & S. (light) weight 3,330 lbs.
1—10"-8" reducer.
1—8"-6" "
1—6"-90° bend.
1—6" x 6" x 6" tee.
Weight of above specials—684 lbs.
1—6" check valve.
2—6" gate valves.

Blow-off from Spring Line to Creek:

32' 0"—5" W. I. screw pipe 3' trench.

Blow-off from Boilers:

28' 0"—5" W. I. screw pipe extra heavy 3' trench.

Blow-off from Secondary Heater to Creek:

40' 0"—1" W. I. screw pipe galvanized.

Drain from Worthington Pit to Creek:

37' 0"—6" vitrified tile, 4' trench.

534 Item No. 21. Concrete Retaining Wall—Wall 11 ft. (Exhibits No. 37 & 45).

140 cu. yds. concrete (forms required).
350 cu. yds. earth fill behind wall.

Item No. 22. Station Yard Improvements.

(*a*) Rock Excavation for Building Site.

This rock was crushed and used in the concrete for foundations.
1,080 cu. yds. solid side hill rock.

(*b*) Fill on Lower Side of Station Site.

565 cu. yds. earth borrowed to make up deficiency not furnished by excavation.

(*c*) Wire Fence.

200 lin. ft. woven wire fence 4′ 6″ high.
24 4″ x 4″ x 8′ 0″ posts, locust, oak and poplar.

(*d*) Log Retaining Wall Along River.

170 ft. long, 3 ft. high, made of 4 or 5 logs piled up with short tie logs running into bank. 6 to 8 ft. spaced 5 to 10 ft. apart.

(*e*) Fill at Coal Chute.

210 cu. yds. fill (earth and loose rock).

Item No. 23. Station, Miscellaneous.

Radiator Frame:

3—wood standards supporting heating coil.
44—bd. ft. 3 x 6 and 2 x 4 dressed poplar.
60—C. I. pipe hangers.

Pump:

1—Weinman double acting single cylinder pump 6 x 3¾ x 8—purchased in 1907 and used only during construction of the Twin tanks.

Boiler:

1—Erie City "Economic" boiler. 80 H.P. contains 42—4″ flues, 5′ 0″ long and 76—3½″ flues, 10′ 0″ long. It is fitted with 1—4″ Angle valve.

535 1—4″ globe valve, 1 water column, 1—2″ safety valve. It was purchased in 1900 and removed in 1907 when the Stirling Boilers were placed. In fair repair.

Table:

1—office table with 4 drawers. 4′ 4″ x 3′ 0″ top. It is made of dressed oak.

Pictures and Frames:

5—frames and glasses on engine plans averaging 26″ x 38″

Coal Scales:

1—Fairbanks Morse "Standard No. 4" scale in pit.
4 cu. yds. earth excavation for pit.
Concrete in 8″ walls 4′ 0″ high and in floor of pit—4 cu. yds.

Coal Wagon:

1—No. 2 light pattern charging barrow.

Oil Filter:

1—No. 3 Cross oil filter.

Pit to Cavern under Station:

Brick lined, square manhole 12″ walls, 2″ oak cover.
4 cu. yds. rock excavation.
2,160 common red brick in Portland cement mortar.
18 bd. ft. 2″ oak plank.

Pit for Snow Auxiliaries:

51 cu. yds. earth excavation.
6½ " concrete in 10″ walls 9′ 2″ high.
256 sq. ft. 8″ concrete floor.

Iron Spiral Stairway in Auxiliary Pit:

4½ ft. in diameter 8 ft. high with hand rail.

536 Board Walk over Auxiliary Pit:

26 lin. ft. 1′ 9″ wide containing:
35 bd. ft. ¾″ tongue and groove pine.
52 " " 2 x 6—pine d 4 s.

Hangers for Pipes:

135 lbs. 1″ round rods with 3 turnbuckles incl.
25 " ½″ " " " 4 " " "

536a *The Beaver Pond Pumping Station.*

537 Item No. 24. The Beaver Pond Station Building (Exhibits Nos. 46-50, Inclusive).

The original station was built in 1892 and consisted of the present pump and one boiler enclosed in a small frame building. An addition was made in 1903 to house another boiler. This building was outgrown and the old building and boilers were removed in 1911 and the present station erected on the site of the old one. It is of wood construction, resting on stone masonry piers. The walls are of rough sheathing covered with a layor of building paper and extra heavy corrugated galvanized iron. The roof is made of Carey patented roofing, on sheathing composed of 7/8" flooring which in turn rests on the rafters. The interior is not ceiled and the building has an earth floor.

Area of floor—1,313 sq. ft.

Cubic contents, outside dimensions, from bottom of sills to average height of roof 26,566 cu. ft.

(1) Foundation:

4 cu. yds. Portland cement rubble masonry piers.

(2) Walls and Framing:

1,734 bd. ft. oak in sills, joists, posts, etc.
2,553 " 1" oak sheathing on walls.
285 sq. yds. building paper.
285 " #23 gauge corrugated galv. iron.

(3) Lumber in Roof:

2,015 sq. ft. 7/8" dressed pine tongue and grooved flooring for sheathing.
1,856 bd. ft. rough oak lumber in rafters and bracing.
237 " trim at eaves—dressed yellow pine painted two coats.

538 (4) Roofing:

225 sq. yds. Carey patented roofing (tarred paper and cloth).

(5) Doors and Windows:

All doors, sashes and frames are of yellow pine, painted two coats.

4 double sash windows—one sash fixed, one sliding. Each sash 34" x 36", with 6 lights 10" x 16".

3 double sash windows—one sash fixed, one sliding, each sash 28" x 32", with 4 lights 10" x 14".

2 doors 3' 0" x 7' 0" made of 2 layers of tongue and grooved 7/8" yellow pine flooring.

(6) Coal Bin:

1,251 bd. ft. rough oak in joists, siding and flooring.

(7) Painting:

All doors, windows and trim at eaves painted two coats.

Item No. 25. Steel Stack and Breeching (Exhibit No. 51).

(*a*) Stack.

1,800 lb. No. 10 steel in stack and breeching.

(*b*) Anchors.

6 cu. yds. excavation for tie rods.
2 cu. yds. concrete for tie anchors.
4—1″ anchor rods with eye, 6′ 0″ long and plate 1′ 0″ x 1′ 0″ x ½″.
330 lin. ft. ⅜″ woven wire rope for bracing.
380 " " ⅜″ twisted wire rope for bracing (6 strand).

The stack and breeching are painted.

539 Item No. 26. Worthington Pump (Exhibit No. 52).

1 Duplex double acting horizontal steam pump Size, 20″ x 10¼″ x 20″—Plungers cut down to 9″. Operates under 100# steam pressure against 359′ head. Capacity 1 Million Gallons per day.
Erected in 1892.

(*a*) Foundation.

5 cu. yds. excavation.
4 cu. yds. stone masonry laid in Portland cement.
1—6′ 0″ x 3′ 4″ x ½″ iron plate bolted on top of foundation with 4—1″ anchor bolts 12″ long.

Item No. 27. Feed Water Heater.

Feed water heater 4′ 6″ high x 20″ diameter.
140# C. I. in legs.

(*a*) Foundation.

1 cu. yd. excavation.
1 " " Portland cement concrete.

Item No. 28. Boiler Plant (Exhibits Nos. 53 & 54).

(*a*) 80 H. P. Boiler.

Boiler made by the Erie City Iron Works. 80 H. P. horizontal, tubular boiler, 54" diameter and 15' 0" long, and containing 64—3" tubes. The boiler is designed for a working pressure of 100 lbs.

Purchased about 1890 by Graham Lumber Co., taken over by Water Works in 1898 and installed in present location. All new tubes put in in 1912.

Fixtures:

Boiler is furnished with C. I. front, flues, grates, doors etc., complete.

Fittings:

1 2" Lonegar pop safety valve.
1 6" Ashcroft steam gauge with siphon and cock.
1 Combination #1 Wright Improved water column with glass gauge and 3 cocks.

540 (*b*) 100 H. P. Boiler.

Boiler made by the Erie City Iron Works, 100 H. P. horizontal tubular boiler 60" diameter and 16' 0" long and containing 54—4" tubes. The boiler is designed for a working pressure of 100 lbs

Purchased about 1901 and installed in Ada pumping Station. Moved to Beaver Pond in 1911 and erected in present setting.

Fixtures:

Boiler is furnished with C. I. front, flues, grates, doors, etc., complete.

Fittings:

1 2½" Scott pop safety valve.
1 6" Ashcroft steam gauge with siphon and cock.
1 Combination #1 Wright Improved water column with glass gauge and 3 cocks.

(*c*) Miscellaneous Piping on Both Boilers.

Water Columns, Whistle, etc.:

8′ 0″—1¼″ W. I. screw pipe.
5′ 0″—1″ " " " "
2 1¼″ elbows.
2 1″ street elbows.
2 1¼″ tees.
2 1″ "
1 1¼″ union.
2 1″ "
1 1¼″—1″ bushing.
2 1″ plugs.
1 1¼″ globe valve.
1 1″ " "

Boiler Blow-off Pipes:

1′ 0″—2½′ W. I. screw pipe
6′ 0″—2″ " " "
1′ 0″—1¼″ " " "
2′ 0″—1″ " " "
6′ 0″—¾″ " " "
1 1¼″—1″ reducing coupling.
1 1″ tee.
1 1″ street elbow.
1 1″ union.
1 1″—¾″ bushing.
1 ¾″ elbow.
1 1″ Globe valve.
1 ¾″ " "

541 (*d*) Boiler Settings.

The boilers are set on a concrete foundation four feet deep. The setting consists of No. 1 hard burned brick set in lime mortar and lined with fire brick. The whole is tied together with longitudinal tie rods and stiffeners on the side walls.

Quantities:

40 cu. yds. excavation in trenches.
36½ " Portland cement concrete.
19,000 No. 1 hard burned brick in lime mortar.
400 fire brick.
48 sq. ft. 8″ concrete floor in ash pit.
380 lbs. C. I. in stiffeners.
550 lbs. shaped steel in bracing.
140 " ⅞″ round wrought iron rods in bracing.

Item No. 29. All Piping in Station.

(*a*) Water Pipes.

All pipes to carry water from main to heater and from heater to boilers. The main was tapped and the 1½" pipe screwed into it.

46' 6"—1½" W. I. screw pipe.
46' 0"—1¼" " " "
1—1½" Tee.
4—1¼" "
1—1½" elbow.
7—1¼" "
4—1¼" union.
2—1½" plug.
1—1⅛"—1¼" bushing.
1—1½" plug valve.
4—1¼" Globe " (Jenkins).
2—1¼" check "

(*b*) Steam Pipes.

Steam pipe from flange on pump to dome on boilers.

30' 4"—4" extra heavy W. I. screw pipe.
4—4" elbows.
1—4" tee.
5—4" flange unions.
1—5"—4" reducing bushing.
1—5" angle valve.
4—4" globe valve, extra heavy (Crane No. 23).

542 Exhaust pipe from pump to heater and from heater to outside of building.

30' 6"—5" W. I. screw pipe, extra heavy.
4—5" elbows.
1—5" flanged union.
1—5"—4" reducing coupling.
1—5"—4" " elbow.

(*c*) Miscellaneous Small Pipe in Station.

Drains on pump and other station piping.

43′ 6″—1½″ W. I. screw pipe.
6′ 0″— ½″ " " "
6—1½″ unions.
4— ½″ "
1—1½″ tee.
3— ½″ "
1—1½″ elbow.
4— ½″ "
1—1½″—1″ reducer.
2—1″ nipples.
1—1½″ globe valve (Lunkenheimer).
1—1½″ " " (Jenkins).
1—1½″ angle valve "
4— ½″ globe valves "

By-pass on pump discharge line around gate valve.

2—1″ corporation cocks.
1—1¼″ plug valve.
2—1¼″ elbows.
1—1¼″ union.

(*d*) Suction Line for Pump.

From flange and spigot pipe on pump to edge of station building.

5′ 0″—10″ C. I. water pipe H. & S., wt. 390 lbs.
4′ 0″— 8″ " " " " 230 "
1—10″ 22½° bend, H. & S.
1—10″ x 8″ reducer, "
1— 8″ tee, "
1— 8″ plug.
Approx. wt. of above specials 750 lbs.

543 (*e*) Discharge Line for Pump.

From flange on pump to and including increaser at edge of building.

32′ 0″—8″ C. I. water pipe, H. & S., *et.* 1,790 lbs.
1—8″ C. I. 45° bend—flanged and spigot.
1—8″ " " " —H. & S.
1—8″ " 90° " "
1—8″ " tee "
1—8″—10″ increaser "
1—8″ plug.

Wt. of above Specials 1,030 lbs.

1—8″ check valve, flanged.
1—8″ gate valve, H. & S. (Eddy).

Item No. 30. Intake and Pipe Line to Pumping Station (Exhibit No. 55).

The intake consists of a wooden box embedded in the stream emerging from the Beaver Pond Spring. This box has a screen cover and contains a foot valve.

Quantities:

60 bd. ft. 2" oak lumber (rough).
1 perforated iron plate 30" x 30" x ⅛", wt. 32 lbs.
135' 0"—10" C. I. water pipe, H. & S. (light) cut 3' 0". Weight 8,600 lbs.
1—10" 22½° bend H. & S. Weight 202 lbs.
1—10" foot valve.

Item No. 31. Station Miscellaneous.

1—1 pint lubricator.
1—revolution counter on pump.

543a *The Distribution System.*

544 Item No. 32. Cast Iron Street Mains (Exhibits Nos. 57 & 58).

1,664.3 tons C. I. pipe in Street Mains.
The above pipe is all Class "B" with the following exceptions:

4,500' of 10" @ 56 lbs. per ft.
2,930' " 10" @ 60 " " "
4,130' " 10" @ 70.8 " " "

Only the records of the Beaver Pond Line are available for the weights of the early pipe lines. Since 1908, the pipe purchased has conformed to Class "B" American Water Works Association Standard.

Item No. 33. Cast Iron Specials in Street Mains (Exhibit No. 59).

32.11 tons of C. I. specials in Street Mains.

Basis for Weight of Specials:

The distribution system was gone over intersection by intersection and the specials actually required to interconnect the mains were listed (See Exhibit No. 59). These total to 1.93% of the weight of the pipe. This amount was arbitrarily increased to 2%. No tees for hydrant connections are included in the above which accounts for the percentage of specials being taken as 2%, instead of the customary 2.5%.

Item No. 34. Laying Cast Iron Street Mains (Exhibits Nos. 57 and 58).

Ordinary trenching including excavation, laying yarn, lead and
ackfill. All pipes have 2 ft. of cover.
The greater portion of the ordinary trenching in Bluefield is more
difficult than the average as large boulders, rock, gravel and
545 shale are encountered, which means almost continuous pick-
ing.
The average depth of trench is 2½ feet.

15,350	lin.	ft.	10″	pipe.
11,840	"	"	8″	"
31,475	"	"	6″	"
28,336	"	"	4″	"
10,495	"	"	3″	"
97,496	"	"	of C. I. Pipe in Mains.	

Item No 35. Galvanized Iron Street Mains (Exhibits Nos. 57 & 58).

As there is no other source for water in Bluefield, it has been the
ractice of the Water Company to lay galvanized iron mains through
ven very sparsely settled districts in order to accom-odate the few
ouses already built. As these districts are built up these smaller
ains are either taken up or abandoned and cast iron put in. The
any scattered and sparsely settled subdivisions in the city make the
ileage of galvanized mains unusually large.

220	lin.	ft.	2½″	galv.	iron	mains.
2,950	"	"	2″	"	"	"
31,055	"	"	1½″	"	"	"
19,615	"	"	1¼″	"	"	"
4,470	"	"	1″	"	"	"
7,115	"	"	¾″	"	"	"
4,060	"	"	½″	"	"	"
69,485	"	"	galvanized iron mains.			

em No. 36. Laying Galvanized Iron Street Mains (Exhibits Nos. 57 & 58).

Ordinary trenching including excavation, laying and backfill. As
in the case of the cast iron mains, this trenching is more
46 difficult than the average due to rocks, boulders, shale and
gravel, which necessitates picking throughout most of the
ench.
The average depth of the trench is 2 feet
69,485 lin. ft. of ½″ to 2½″ galv. iron pipe in mains.

Item No. 37. Extra for Unusual Excavation (Exhibits Nos. 60 & 61).

The quantities listed under this item were determined by a careful inspection covering the entire distribution system in which the location and extent of the difficult excavation necessary was noted by the character of the surface soil. This information was supplemented by a detailed statement of materials encountered which was furnished to us by the foreman on pipe laying.

There are two classifications of the difficult excavation, rock and shale. The rock is a solid limestone unusually hard to drill and shoot and being folded so that the strata lie almost vertically; the cost of this work is very high. The actual cost of drilling and shooting one stretch of trench was over a dollar a lineal foot. The shale is very seamy and, like the rock, lies in almost a vertical plane. This makes it extremely slow work to excavate as it cannot be shot and picking does not loosen it in large pieces.

Rock and Shale Trenches:

1,285 cu. yds. solid rock excavation.
6,680 " " shale excavation.

Wet Trenches:

In addition to the above, water was encountered along Adams Street for 1,830 feet in such quantities as to require constant pumping.

1,830 lin. ft. of wet trench.

547 Under Buildings:

Between Hardy St. & Roanoke St., the 4" line lies under two warehouses for a distance of 260 ft. Were this line to be relaid parallel to the switch track of the railroad where it would be accessible, it would require a small amount of extra pipe which amount is:

10 ft. 4" pipe laid in 2 ft. earth trench.

Item No. 38. Steam Railroad Crossings (Exhibits Nos. 61 & 63).

There are five steam railroad crossings, four of which lie under the main line and yards of the Norfolk & Western Railroad where the tracks are continually in use. These yards are unusually busy, as Bluefield is the end of the electrification system as well as a division point and the yards contain extensive shops, round house and repair tracks.

Over and above the cost for ordinary trenching for pipe laid across the following railroad crossings:

Hardy St. near Roanoke St.:

The 4″ main is depressed as it passes diagonally under a switch track at this point, the requirements of the railroad calling for 5 feet of cover over pipes passing under tracks.

20 feet of 4″ pipe in 5½ ft. trench under 1 track.

Pearis St. Crossing:

At Pearis St. the 8″ main crosses the main line of the Norfolk & Western R. R. under 9 tracks. On the South side the tracks are approximately 4 ft. above Pearis St. and the fill is supported by a timber retaining wall. The pipe enters the railroad property
548 under this wall at a depth of 8½ feet below the first track. It rises as it crossed the tracks until there is only 6 feet of cover on the north side, here it follows the slope up to the grade of the Pulaski St. main. The excavation was not exceedingly difficult, the chief obstruction being the tracks and the continuous switching of trains.

Length of crossing 212 feet.

Thomas St. Crossing:

At Thomas St. a 4″ main crosses the main line of the railroad under 8 tracks. This crossing was very expensive as the north half of the pipe lies through solid rock and the labor of getting a trench opened up without interfering with traffic was difficult and costly.

The depth of trench was 5 feet.

Length of crossing 220 feet.

Mercer St. Crossing:

This is at the most congested part of the yards as it is near the depot and the waiting tracks for engines are at this point. The railroad is depressed about 15 ft. below the levels of Princeton Ave. and Roanoke St. and massive masonry retaining walls 12 ft. thick at the base support the side of the cut. On the Princeton Ave. side there are two of these walls with an incline road leading down into the yards between. This incline is paved with cob-le stones. The pipe at Princeton Ave. drops vertically from a tree and elbow 12
549 feet and then swings under the two retaining walls, turns west for 60 ft. then north crossing under 15 tracks at a depth of 5 feet until it reaches Roanoke St. where it turns up in an elbow and rises vertically 23 feet to an elbow and tee in the street main.

Length of crossing 330 feet.

Logan St. Crossing:

Near Logan St., there is a 6″ pipe crossing under 17 tracks. At this point in the years, the coal trains are made up while the three north tracks are used for car repair purposes. The pipe crosses

under the tracks at a depth of 5 feet and the same amount of delay caused by heavy railroad traffic was encountered at this point as at the other crossings.

Length of crossing 520 feet.

Item No. 39. Street Railroad Crossings (Exhibit No. 64).

Extra over and above the cost of ordinary trenching for pipe crossings under street railway tracks.

Cast Iron Mains:

Right angle crossings—24 tracks crossed.
Diagonal crossings — 4 " "

Galvanized Iron Mains:

Right angle crossings—4 tracks crossed.
Diagonal crossings —2 " "

550 Item No. 40. Pavements over Street Mains (Exhibits Nos. 65 & 66).

Extra over and above the cost of ordinary trenching for pipes laid under paved streets.

(*a*) Brick on Concrete (Exhibit No. 66*a*).

Brick on 6" concrete base.
19,965 lin. ft. of Cast Iron Mains.
835 " " " Galv. " "

(*b*) Granite Block on Concrete (Exhibit No. 66*b*).

Granite block on 6" concrete base.
520 lin. ft. Cast Iron Mains.

(*c*) Plain Macadam (Exhibit No. 66*c*).

2½ top on 5" stone base.
6,940 lin. ft. Cast Iron Mains.
925 " " Galv. " "

(*d*) Bitulithic Macadam on Concrete (Exhibit No. 66*d*).

2" macadam on 4" concrete base.
14,215 lin. ft. Cast Iron Mains.
710 " " Galv. " "

(*e*) Water Bound Macadam (Exhibit No. 66*e*).

8" thick.
3,730 lin. ft. Cast Iron Mains.
25 " " Galv. " "

(*f*) Mains in Parking.

When mains are placed in the parkings on streets already paved, it is necessary to protect as much as possible the sod and when the work is complete all sod that has been removed is replaced and the parking restored to its former appearance.

1,780 lin. ft. Cast Iron Mains.
5,780 " " Galv. " "

551 Item No. 41. Valves on Mains (Exhibits Nos. 57 & 67).

6—10" Double gate valves.
23— 8" " " "
82— 6" " " "
63— 4" " " "
20— 3" " " "
1— 8" Check Valve.
1— 6" " "
1—10" Electro hydraulic gate valve.
1— 8" " " " "
1— 6" " " " "
199 valves in place.

Fittings on the Electro Hydraulic Valves:

Bland St. Valve (10"):

7'—¾" galv. iron pipe.
6—¾" elbows.
2—¾" unions.
1—¾" strainer.
1—¾" cut off.

Pearis St. Valve (8"):

5'—¾" galv. iron pipe.
9—¾" elbows.
2—¾" unions.
1—¾" strainer.
1—¾" cut off.

Princeton Ave. Valve (6"):

6'—¾" galv. iron pipe.

Item No. 42. Valve Boxes on Mains.

(*a*) Vaults for Electro-Hydraulic Valves.

(1) Cor. Peris & Fourth Streets:

A rectangular vault made with 8" brick walls and a reinforced concrete and brick slab roof containing a C. I. manhole cover. The

inside walls of the vault are plastered with cement mortar and there is a 4" drain tile reaching to the sewer.

552 5 cu. yds. excavation (earth).
900 brick laid in cement mortar.
28 ft. 4" x 4" x 9.8# angles in roof, weight 274 lbs
460 lbs. C. I. in cover and frame.
15 ft. 4" vit. tile in 5' trench.

(2) Cor. Bland and Higginbotham Streets:

A rectangular vault blasted out of solid rock. The walls are 8" brick with the inside plastered with cement mortar. A C. I. manhole cover is grouted on the sidewalls—Vaults in brick pavement.

Quantities:

3 cu. yds. excavation (solid rock).
800 common red brick in cement mortar.
460 lbs. C. I. in cover and frame.

(3) On Princeton Ave. near Giles Street:

A rectangular vault with 8" brick walls and a cast iron cover. Inside of walls plastered with cement mortar.

Quantities:

2½ cu. yds. excavation (earth).
820 common red brick in cement mortar.
460 lbs. C. I. cover and frame.
20'—4" vit. tile drain in 3 ft. trench.

(*b*) Cast Iron Valve Boxes.

188 C. I. valve boxes weighing 58 lbs. each.

Item No. 43. Fire Hydrants (Exhibit No. 68).

The first 15 hydrants installed are owned by the Water Company, but all other hydrants are owned by the City. The Water Company buys the hydrants and sets them under the direction of the city, billing them for all materials and labor used, which includes

553 the cost of the hydrants, specials, valve, valve box and pipe in the branch.

15—4" Eddy hydrants 2—2½" nozzles with barrel 3½ ft. long. There are in addition 103 hydrants owned by the city.

Item No. 44. Services and Fittings.

The taps and corporation cocks are placed by the Company without charge. Each service consists of corporation cock, goose neck, pipe to curb, curb cock and box. Previous to April 1, 1908, the service pipes were of galvanized iron pipe but since that date they

have been made of lead with an average length of 16 feet. On April 1, 1908, there were 1,597 services in use. Where meters are installed the Company puts in the meter, meter box and couplings.

Services in Use:

Size.	No. in use.
6"	1
4"	3
3"	2
2"	8
1½"	3
1"	14
¾"	2
½"	2,201
Total Services	2,234

(Jan. 1, 1915.)

554 Item No. 45. Meters in Service.

1—4" Gem.
1—2" Neptune (Compound).
3—1" "
6—2" Nash.
1—1" Neptune.
1—1½" Lambert.
1—¾" Neptune.
1—1" Keystone.
179—½" Empire.
347—½" Neptune.
8—½" Crown.
1—1" Lambert.
389—½" Niagara.
365—½" Keystone.
12—½" Hersey.
1—1" Nash.
100—½" "
1—½" Standard.
149—½" Gamon.

1,467—Total number of meters in service January 1, 1915.

Item No. 46. Meter Boxes and Vaults.

1,458 Standard Meter Boxes:

A meter box consisting of 1 joint of 18" vit. tile with no bell and a C. I. cover and ring. Weight of the iron cover and ring 65 lbs.

1 Meter Vault on Gravity Spring Line:

Made of 10" concrete walls with an 8" reinforced concrete roof containing 3 extra heavy meter box covers. The vault is 10' 0" x 4' 6" x 3' 0" high (inside dimension) and contains 6—2" meters and fish traps connected between two parallel 6" stub pipes leading off from the Gravity Spring line. A gate valve located in the spring line between these stubs makes it possible to either by-pass the meters or force the water to flow through them. The vault is connected with a drainage ditch by 21 ft. of 6" vit. tile.

Quantities:

11 cu. yds. excavation (earth).
5 " concrete in walls and roof.

555

635 lbs. ¾" round rods.
3 C. I. meter box covers, ex. heavy, approx. weight 100 lbs. each.
21 ft. 6" vit. tile in 3' trench.
10' 0"—6" C. I. pipe, H. & S. Wt. 330 lbs.
20' 0"—6" W. I. screw pipe.
2—6" C. I. Y-branches weight 362 lbs.
2—6" " 45° bends " 210 "
12—6" x 2" C. I. tees for screw pipe.
6—2" companion flanges.
24—2" elbows.
36—2" nipples.
2—6" plugs.
3—6" C. I. gate valves H. & S.
6—2" fish traps.
6—2" meters (Listed in Item No. 45).

1 Brick Meter Vault (N. & W. R. R. on Hardy St.):

5' 0" x 3' 6" x 3' 0" high (outside dimensions) with 8" brick sidewalls and 2" plank cover.

Quantities:

2 cu. yds. excavation (earth).
640 common red brick in cement mortar.
35 bd. ft. 2" oak plank.

1 Brick Meter Vault (Matz Hotel):

4' 0" x 3' 8" x 3' 6" high (inside dimensions) with 8" brick walls and large C. I. manhole cover and frame. Under cement sidewalk.

Quantities:

4 cu. yds. excavation (earth).
900 common red brick in cement mortar.
1 C. I. cover and frame—wt. 640 lbs.

1 Brick Meter Vault (Pocahontas Coal Company):

3′ 0″ in inside diameter by 2′ 8″ high with 8″ brick walls and a C. I. manhole cover and frame. Vault built under cement sidewalk.

Quantities:

2 cu. yds. excavation (earth).
450 common red brick in cement mortar.
1 C. I. cover and frame—wt. 600 lbs.

556 Extra for Placing Standard Meter Boxes in Concrete.

Sidewalks:

These boxes are on business streets and some residence streets where it is impossible to put them anywhere excepting under the walk.
434 meter boxes placed in cement sidewalks.

557 Item No. 47. Twin Tanks (Exhibits Nos. 69 & 70).

The Twin Tanks are placed on top of the hill separating Bluefield from South Bluefield. The hill top was levelled down enough to make room for four tanks but only two have as yet been installed. This grading was very difficult and expensive as it was all shale in vertical layers. Holes were drilled and the ground blasted, then heavy plows broke it up further. The tanks are identical in construction and consist of a steel shell placed on a 2 ft. concrete foundation. The roofs are of 1″ sheathing covered with heavy tar paper and are supported by steel trusses. There is a ventilator on each tank and a trap door through the roof. A ladder reaching the full height of the tank is bolted to the outside. Each tank is fitted with a 10″ supply pipe, a 12″ overflow and a 12″ washout.
The site of the tanks is very difficult of access owing to the excessive grades and the cost of construction was thus increased considerably.
The tanks are each 50 feet high by 50 feet in diameter and were built in 1906.

Quantities:

Excavation for Site of Tanks:

1,198 cu. yds. hard shale excavation.
1,765 " " " " " (for future tanks).

Foundations for 2 Tanks:

315 cu. yds. concrete.

558 Material in 2 Tanks:

486,000 lbs. steel in tanks.
38,400 " " " roof trusses.
5,500 bd. ft. of lumber in sheathing and prulins.
166 squares tar paper.

Piping and Drains.

Overflow Drain for 2 Tanks:

88' 0"—12" Vit. tile.
8 —12" " " tees.

Overflow for 2 Tanks:

122' 0"—12" C. I. pipe, flanged, wt. 9,340 lbs.
2 —12" C. I. elbows, flanged, " 580 "

Washout for 2 Tanks:

28' 0"—12" C. I. pipe, flanged, wt. 2,140 lbs.
2 —12" C. I. elbows, flanged, wt. 580 "
2 —12" " gate valves, " "

Supply for 2 Tanks:

30' 0"—10" C. I. pipe, flanged, wt. 1,770 lbs.
2 —10" C. I. elbows, "
2 —10" " "Y" branches, H. & S.
1 —10" " Plug.
Approx. wt. of above specials 1,320 lbs.
2 —10" C. I. gate valves, H. & S.

Painting:

The tanks are painted two coats.
31,400 sq. ft. of two coat painting.

Item No. 48. Bland Street Tank (Exhibits Nos. 71 & 72).

The tank is made of steel plates varying from 3/16" to 3/8" in thickness. It is 35 feet high by 35 feet in diameter and sets on a stone masonry foundation in a hollow cut out of the side of
559 the hill. A picket fence made of 2½" x ¼" iron bars surrounds the top of the tank and an iron ladder reaches to the top, both inside and outside. A manhole is located near the bottom. The tank contains 2 inlets, one from the Gravity Springs and one from the Twin Tanks operated by float valve.

The excavation is in hard shale. Two small concrete retaining walls are built on the hillside below the tank as a protection against the washing out of the earth below the foundation.

Quantities:

1,110 cu. yds. shale excavation.
180 " " stone masonry in foundation.
70,000 lbs. of steel in tank.
6 cu. yds. concrete in retaining walls.

Piping and Drains:

Overflow and Drain:

36′ 0″—10″ C. I. pipe, flanged, 2,120 lbs. weight.
1 —10″ C. I. elbow, " 210 " "
15′ 0″—12″ Vit. tile in 2′ trench.
220′ 0″—10″ " " " " "

Piping:

278′ 0″—10″ C. I. pipe, H. & S. Wt. 17,750 lbs.
10′ 0″—12″ " " flanged " 764 "
330′ 0″— 6″ " " H. & S. " 11,000 "
1 —10″—12″ C. I. increaser.
2 —10″ x 6″ C. I. tees.
1 —10″ x 8″ C. I. "Y" branch.
1 —12″ C. I. elbow.
5 — 6″ C. I. elbows.
1 — 6″ C. I. 45° bend.
Approx. wt. of above specials 2,522 lbs.
3 —10″ gate valves.
2 — 6″ " "

560 Item No. 49. Electric Transmission Line.

The three electro-hydraulic valves are operated from three switches in the Water Works office. The current is taken from a battery consisting of 20 dry cells. The transmission line is made of 2 lines of No. 12 copper clad wire strung on 30 ft. poles with glass insulators on 2-pin cross arms, braced with galvanized braces.

Quantities:

55—30′ poles.
58—2 pin cross arms.
130—pins.
130—glass insulators.
42—24″ galv. iron cross arm braces.
510—lbs. No. 12 B. & S. gauge copper clad wire.
20—dry batteries.

560*a* *Miscellaneous.*

561 Item No. 50. Inventory of Laboratory Equipment (Exhibit No. 73).

Includes all apparatus and chemicals in the laboratory.

Item No. 51. Inventory of Office Furnishings (Exhibit No. 74).

Includes all furnishings in the office building.

Item No. 52. Inventory of Materials & Supplies (Exhibit No. 75).

Includes all tools, supplies, vehicles, pipe, etc., at the Ada Pumping Station, in the pipe yard and in the Meter Shop.

Item No. 53. Cost of Engineering and Superintendence.

These costs to begin with the surveys and preparations of such detailed plans as are finally agreed upon in the franchise requirements, and end with the completing and placing of the plant in operation.

It covers the following items:

(*a*) Salary and Expenses of Superintendent and Engineering Force.
(*b*) Preparation of Detailed Plans.
(*c*) Preparation of Specifications.
(*d*) Preparation and Letting of Contracts.
(*e*) Setting of Lines and Grades.
(*f*) Inspection of Work.
(*g*) Estimates of Contractor.
(*h*) Purchase of Material and Supervision of Labor where it is not contracted.
(*i*) Final Tests and Adjustment of Contracts.
(*j*) The placing of the Plant in Successful Operation.

And, in general, all the ordinary engineering, superintendence and technical management of the construction.

562 Item No. 54. General Administrative and Legal Costs.

Including the salaries and expenses of the Company's Officers, Accountants and Attorneys during the period of construction, commencing at the end of the time covered by Preliminary Costs, and continuing to the time when the plant is put in successful operation.

These costs include:

(*a*) Salaries of General Officers.
(*b*) Salaries and Expenses of Office Assistants.
(*c*) Cost of Accounting.
(*d*) Legal Advice.
(*e*) Rent and Office Expense.

Item No. 55. General Contingent Costs During Construction.

Being all costs growing out of omissions or unforeseen changes or events during construction.

This item includes:

(*a*) Changes in Construction due to Unforseen Obstacles developed during the Progress of the Work.
(*b*) Rise in prices of material or labor above Normal.
(*c*) Financial Panics.
(*d*) Inclement Weather causing Delays.
(*e*) Floods causing Both an Actual Property Loss and Unavoidable Delays.
(*f*) Failure of Contractors.
(*g*) Especial Unforseen Difficulties encountered in Deep Excavations.
(*h*) Strikes.
(*i*) Litigations.
(*j*) Taxes and Assessments on Real Estate and Personal Property for one Year.
(*k*) Insurance.

And, in general, all costs which experience has shown must be allowed for by a prudent man engaging in a large constructive enterprise over and above that which can be specifically enumerated.

563 Item No. 56. Interest During Construction Period.

Being computed upon the theory that all of the moneys required for materials and labor, Engineering and Superintending costs; General, Legal and Contingent costs, Real Estate and Preliminary costs were expended in growing amount prior to and during the period of construction.

Item No. 57. The Going Concern Value.

When the Cost of Reproduction is used to determine the value of the Plant, the Going Concern Value is the Cost of Reproducing the business and income of the Company.

Item No. 58. Operating Capital.

This includes such cash on hand as may be necessary to conduct the business of this Company and which cannot be withdrawn or used for other purposes.

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567 [Illustration omitted.]

View of the City from the Bland Street Tank.

[Illustration omitted.]

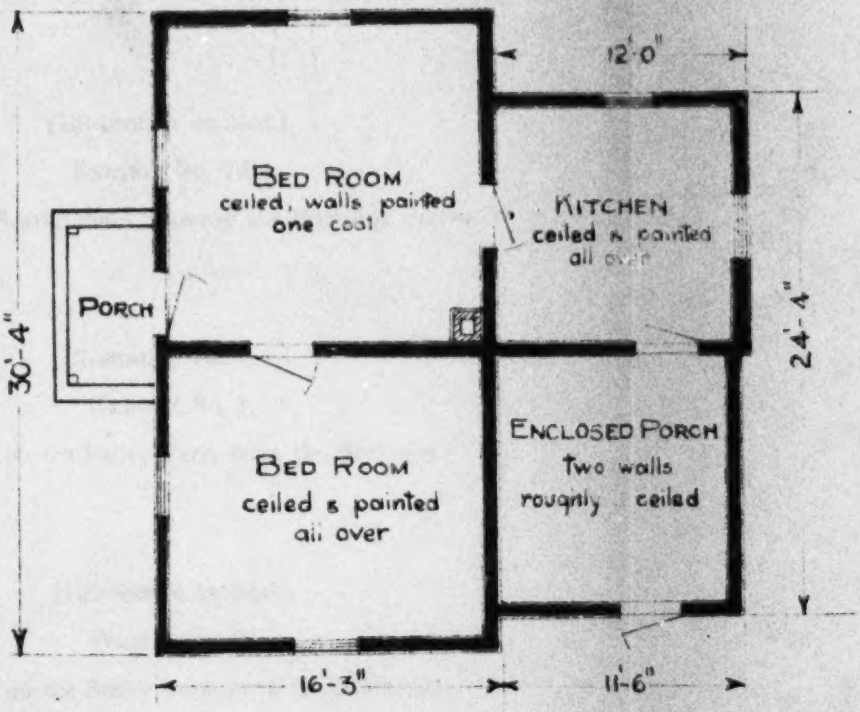
View of South Bluefield from Washington Street Hill.

(Here follows Exhibit No. 1, marked page 568.)

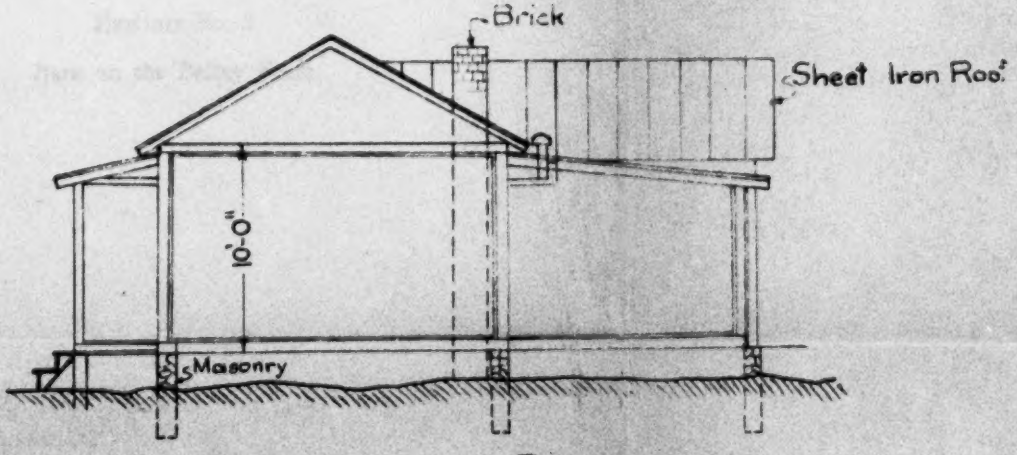
Exhibit No. 1

COTTAGE AT BEAVER POND

Scale ⅛" 1'-0"



PLAN



SECTIONAL ELEVATION

569 [Illustration omitted.]

EXHIBIT No. 2-A.

Dwelling at Beaver Pond.

[Illustration omitted.]

EXHIBIT No. 2-B.

Dwelling at Beaver Pond Showing the Pumping Station.

570 [Illustration omitted.]

EXHIBIT No. 3.

Dwelling on the Bailey Farm from the Northeast.

[Illustration omitted.]

EXHIBIT No. 4.

Dwelling on the Bailey Farm from the Northwest.

571 [Illustration omitted.]

EXHIBIT No. 5.

Barn on the Bailey Farm.

[Illustration omitted.]

EXHIBIT No. 6.

Dwelling at the Ada Spring.

572 [Illustration omitted.]

EXHIBIT No. 7.

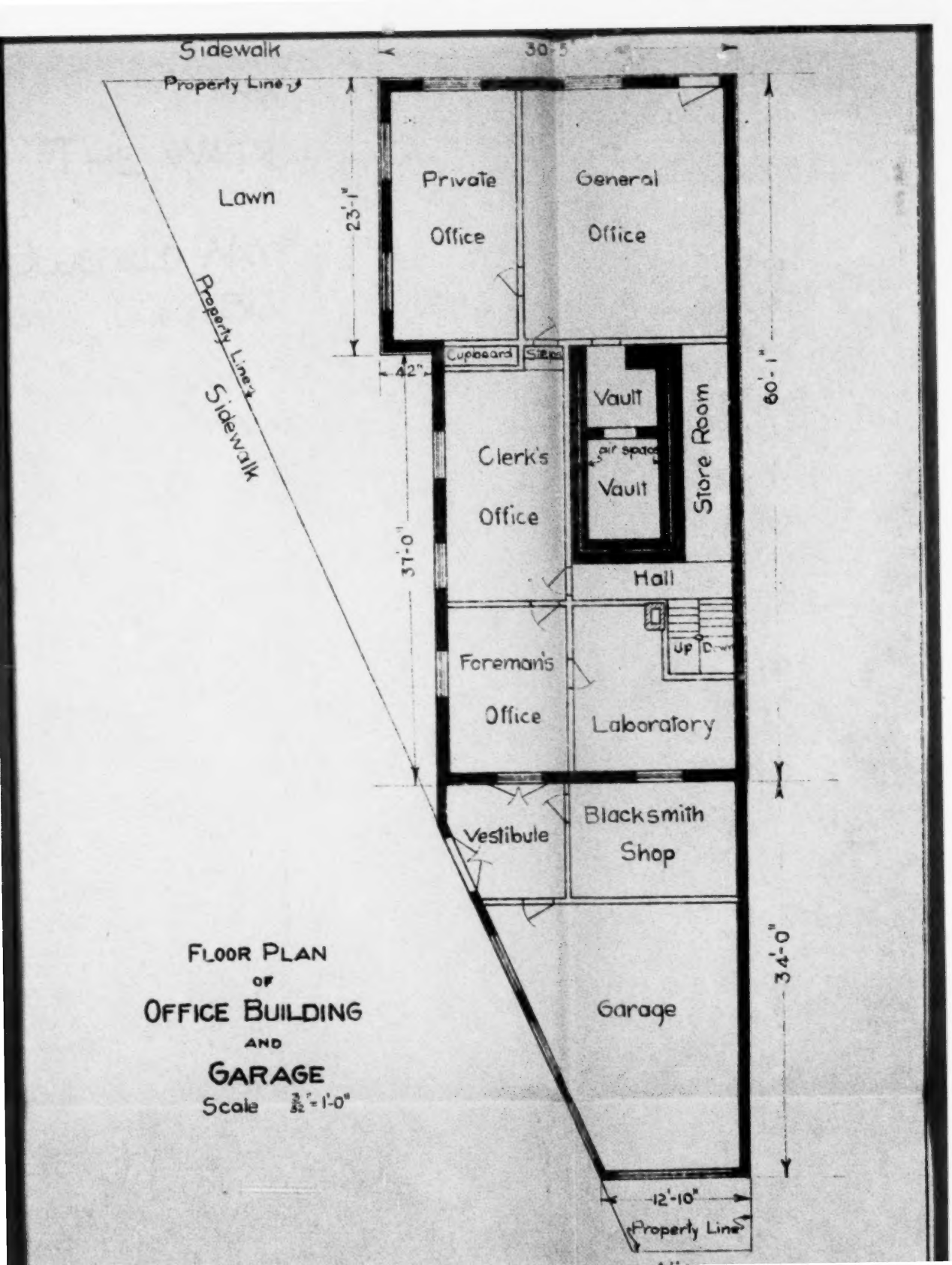
Dwelling on the Ruble Farm from the West.

[Illustration omitted.]

EXHIBIT No. 8.

Dwelling on the Ruble Farm from the East.

(Here follows Exhibit No. 9, marked page 573.)



FLOOR PLAN
OF
OFFICE BUILDING
AND
GARAGE
Scale 3/32"=1'-0"

CITY OF BLUEFIELD

HILL AVE.
PULASKI ST.
HARDY ST.
WAYNE ST.
PRINCETON AVENUE
BLUEFIELD AVE.
ROGERS ST.
THIRD ST.
FOURTH ST.
HIGHLAND AVE.
CAROLINA
MERCER ST.
BLAND ST.
TANK
RALEIGH ST.
WYOMING ST.
LEE ST.
HIGH ST.
CALHOUN
PENDLETON AVE.
WHEELING TER.
TWIN TANKS
ELLIS ST.
PRESTON AVE.
BOWYER ST.
ADAMS STREET
WYTHE AVE.
JEFFERSON STREET
BLAND
CUMBERLAND
CITY OF BLUEFIELD
BEAVER POND PUMPING STA.
BEAVER POND SPRING #23
#1
#2
#3
#4
#5
#6
#7 & #8
#9
10"
8"
6"
4"

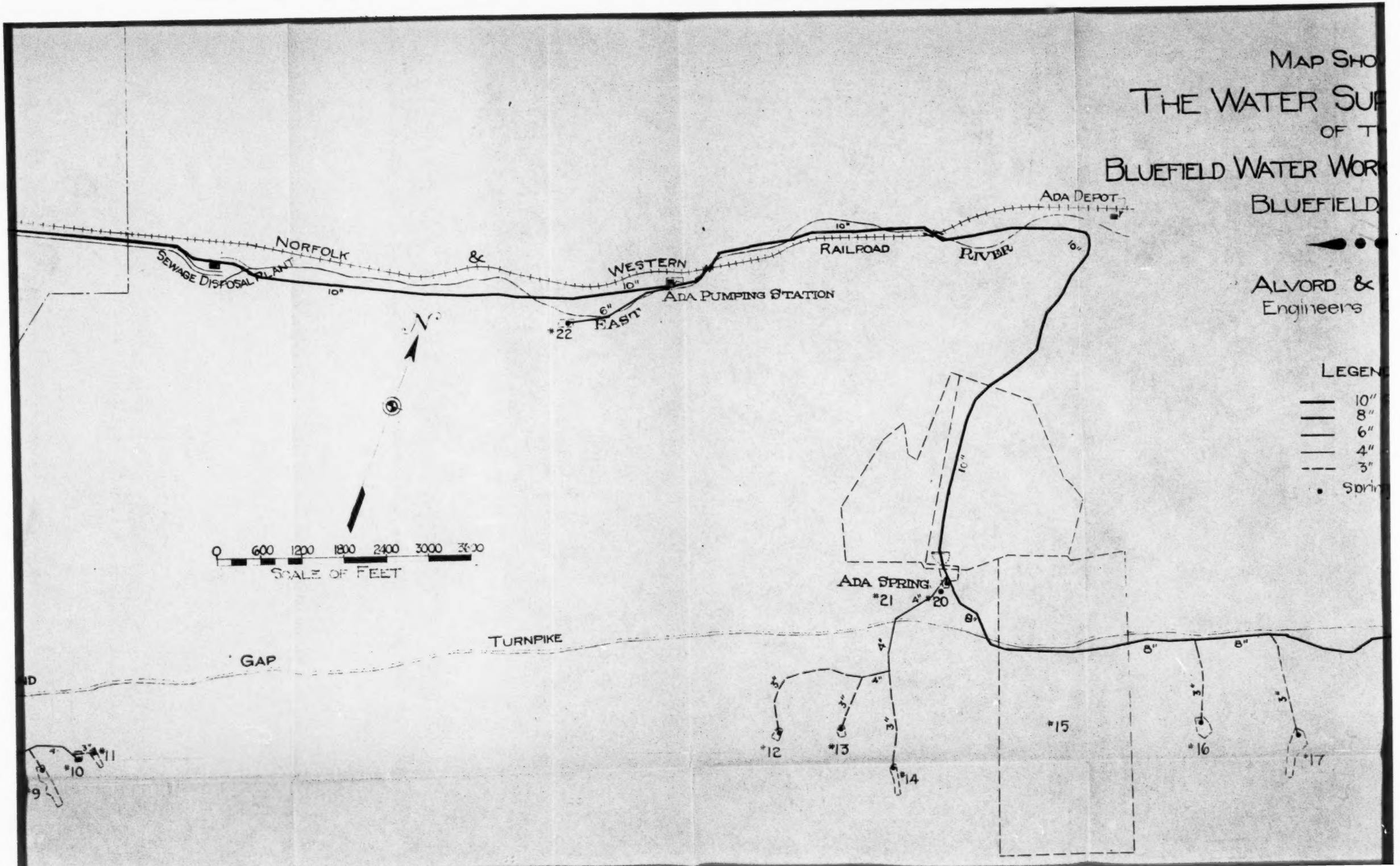

MAP SHO
THE WATER SU
OF T
BLUEFIELD WATER WOR
BLUEFIELD
ALVORD &
Engineers
LEGEN
10"
8"
6"
4"
3"
Sprin
NORFOLK & WESTERN RAILROAD
SEWAGE DISPOSAL PLANT
ADA PUMPING STATION
ADA DEPOT
RIVER
EAST
*22
N
0 600 1200 1800 2400 3000 3600
SCALE OF FEET
ADA SPRING
*21
*20
TURNPIKE
GAP
*15
*12
*13
*14
*16
*17
*10
*11
*9

EXHIBIT No. 13

MAP SHOWING
THE WATER SUPPLY SYSTEM
OF THE
BLUEFIELD WATER WORKS & IMPROVEMENT CO
BLUEFIELD, W. VA.

ALVORD & BURDICK
Engineers Chicago

LEGEND

- 10" Pipe
- 8" "
- 6" "
- 4" "
- 3" "
- Spring Houses

NORFOLK & WESTERN RAILROAD

ADA DEPOT

RIVER

ADA PUMPING STATION

ADA SPRING

JERRELL SPRING * 9

TURNPIKE

*12 *13 *14 *15 *16 *17 *18 *20 *21 *22

10" 8" 6" 4" 3"

EAST

N

600 1200 1800 2400 3000 3600
SCALE OF FEET

574

[Illustration omitted.]

EXHIBIT No. 10.

Office Building and Garage.

[Illustration omitted.]

EXHIBIT No. 11.

Office Building and Garage, Rear View.

(Here follows Exhibit No. 12, marked page 575.)

576 [Illustration omitted.]

EXHIBIT No. 13.

Method of Laying Infiltration Lines, the Open Trench.

[Illustration omitted.]

EXHIBIT No. 14.

Method of Laying Infiltration Lines, the Vitrified Tile in Place.

577 [Illustration omitted.]

EXHIBIT No. 15-A.

Method of Laying Infiltration Lines, Crushed Rock Around Tile.

[Illustration omitted.]

EXHIBIT No. 15-B.

Method of Laying Infiltration Lines, Ready for Earth Covering.

578 [Illustration omitted.]

EXHIBIT No. 16.

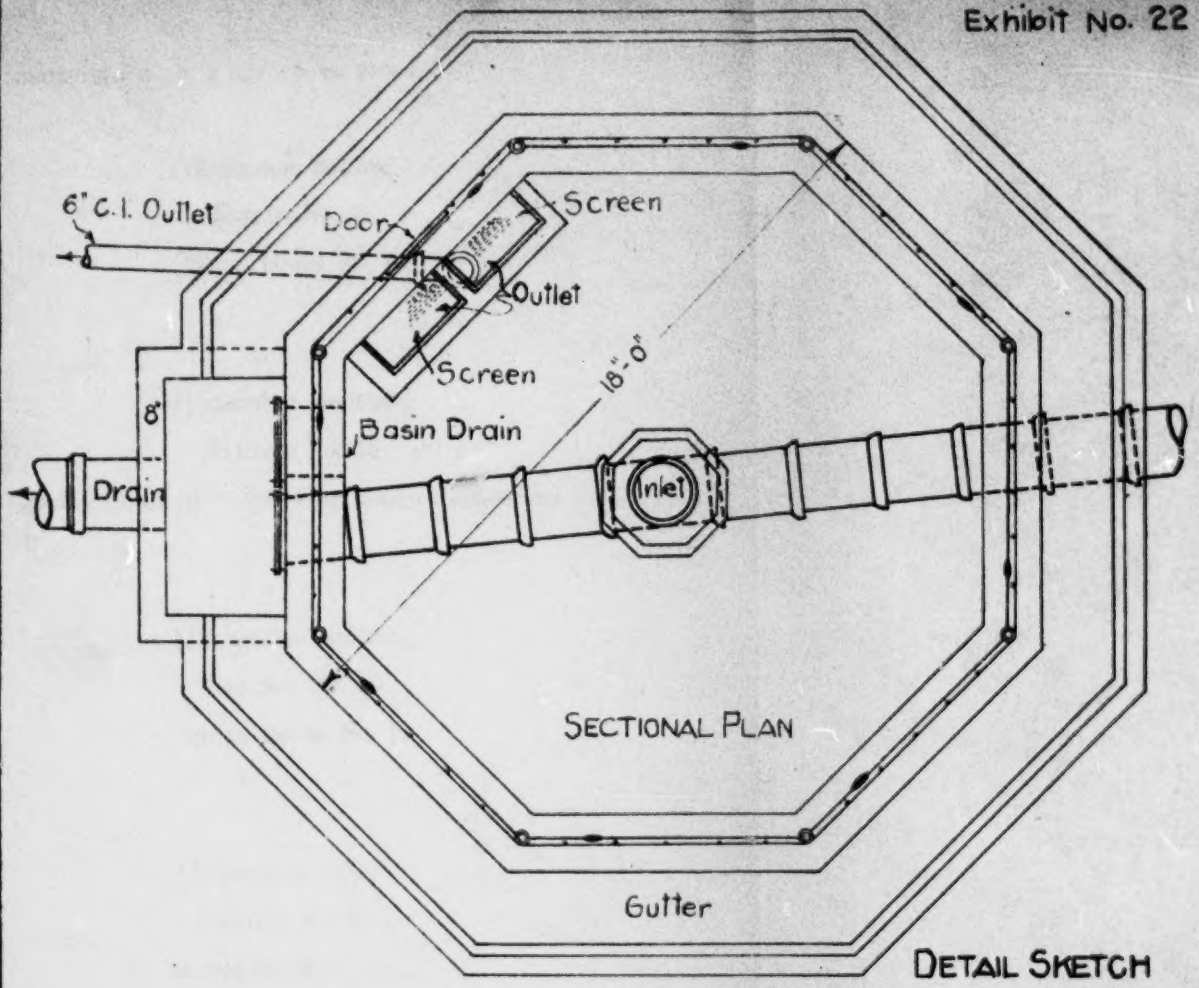
Spring House No. 1.

[Illustration omitted.]

EXHIBIT No. 17.

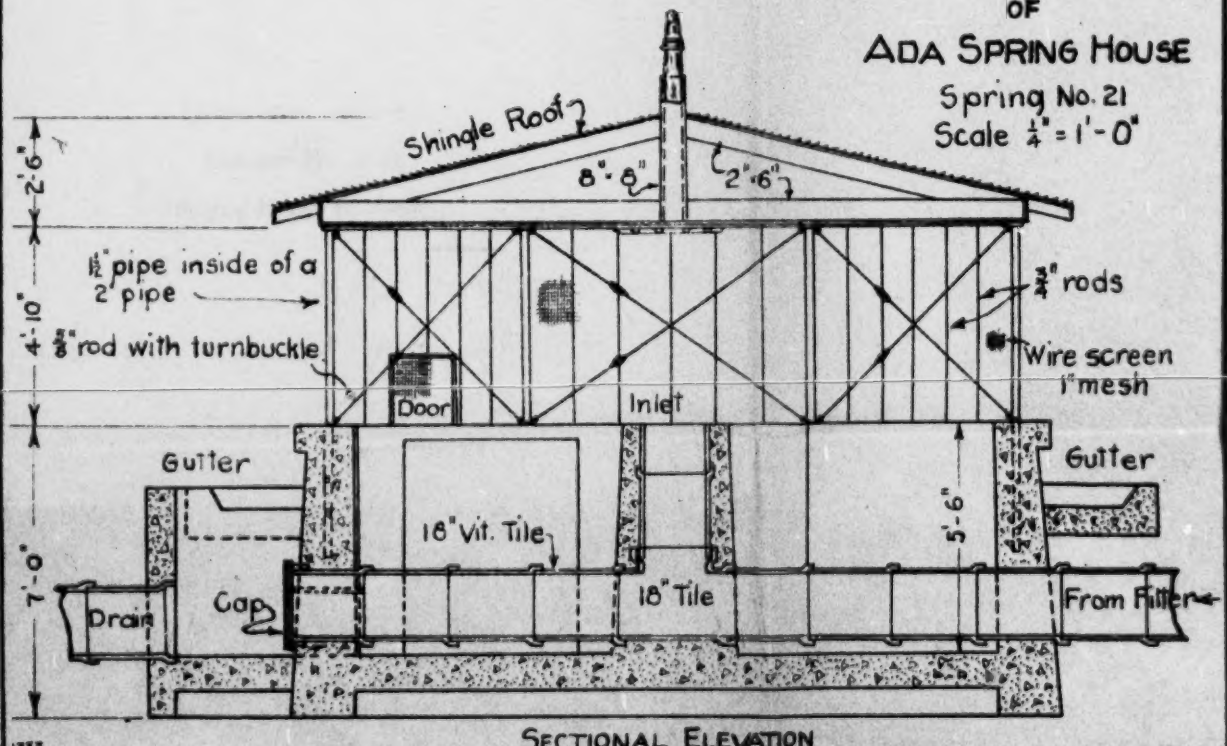
Spring House No. 6.

Exhibit No. 22



DETAIL SKETCH OF ADA SPRING HOUSE

Spring No. 21
Scale $\frac{1}{4}$" = 1'-0"



SECTIONAL ELEVATION

579 [Illustration omitted.]

EXHIBIT No. 18.

Spring House No. 7.

[Illustration omitted.]

EXHIBIT No. 19.

Spring House No. 9, Showing Rough Topography.

580 [Illustration omitted.]

EXHIBIT No. 20.

Spring House No. 11.

581 [Illustration omitted.]

EXHIBIT No. 21-A.

Spring House No. 18-A.

[Illustration omitted.]

EXHIBIT No. 21-B.

Spring House No. 18-B.

(Here follows Exhibit No. 22, marked page 582.)

583 [Illustration omitted.]

EXHIBIT No. 23-A.

Spring House at Ada Spring.

[Illustration omitted.]

EXHIBIT No. 23-B.

Spring House at Ada Spring.

584 [Illustration omitted.]

EXHIBIT No. 24.

Basin at Ada Spring.

[Illustration omitted.]

EXHIBIT No. 25.

Jarrell Spring.

585 [Illustration omitted.]

EXHIBIT No. 26.

Beaver Pond Spring.

[Illustration omitted.]

EXHIBIT No. 27.

Reservoir and Dam. Lower Side.

(Here follow Exhibits Nos. 28*a* and 28*b*, marked pages 586 and 587.)

CITY OF BLUEFIELD

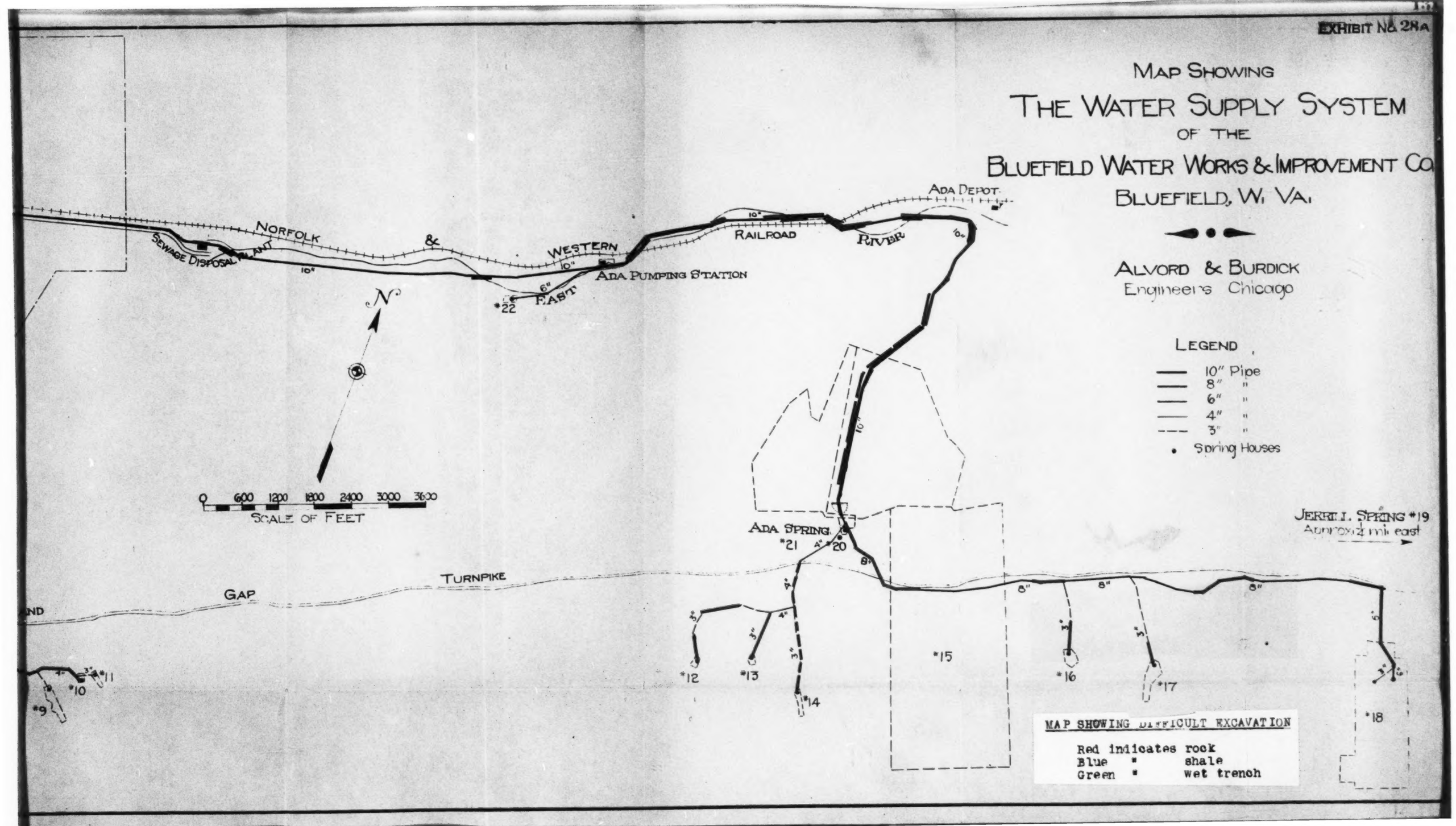
HILL AVE.
PULASKI ST.
ST.
HARDY ST.
WAYNE ST.
PRINCETON AVENUE
BLUEFIELD AVE.
ROGERS ST.
THIRD ST.
FOURTH ST.
HIGHLAND AVE.
CAROLINA AVE.
MERCER ST.
RALEIGH ST.
WYOMING ST.
LEE ST.
HIGH ST.
CALHOUN ST.
TANK
PENDLETON TER.
WHEELING AVE.
TWIN TANKS
SEWAGE DISPOSAL
ELLIS ST.
10" STREET
PRESTON AVE.
BOWYER ST.
ADAMS STREET
WYTHE AVE.
JEFFERSON ST.
BLAND ST.
CITY OF BLUEFIELD
CUMBERLAND GAP
BEAVER POND PUMPING STA.
BEAVER POND SPRING #23
#1
#2
#3
#4
#5
#6
#7 & #8
#9
#10
#11
6"
8"
10"
4"
3"
2"

1329

EXHIBIT NO 28A

MAP SHOWING
THE WATER SUPPLY SYSTEM
OF THE
BLUEFIELD WATER WORKS & IMPROVEMENT CO
BLUEFIELD, W. VA.

ALVORD & BURDICK
Engineers Chicago



LEGEND

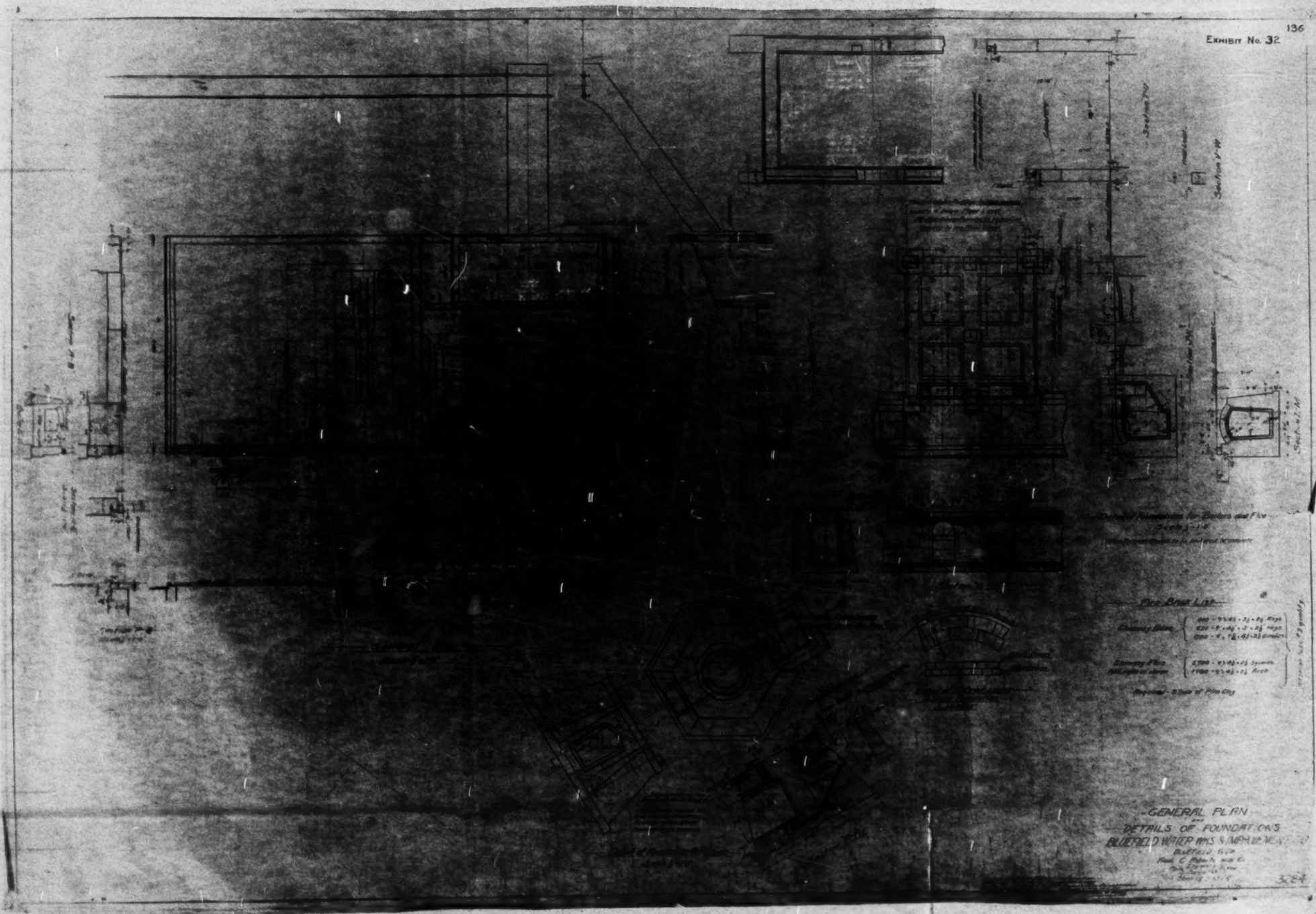
- 10" Pipe
- 8" "
- 6" "
- 4" "
- 3" "
- Spring Houses

MAP SHOWING DIFFICULT EXCAVATION

Red indicates rock
Blue " shale
Green " wet trench

DIAGRAM SHOWING
PRINCIPAL ELEVATIONS
OF THE
BLUEFIELD WATER WORKS SYSTEM

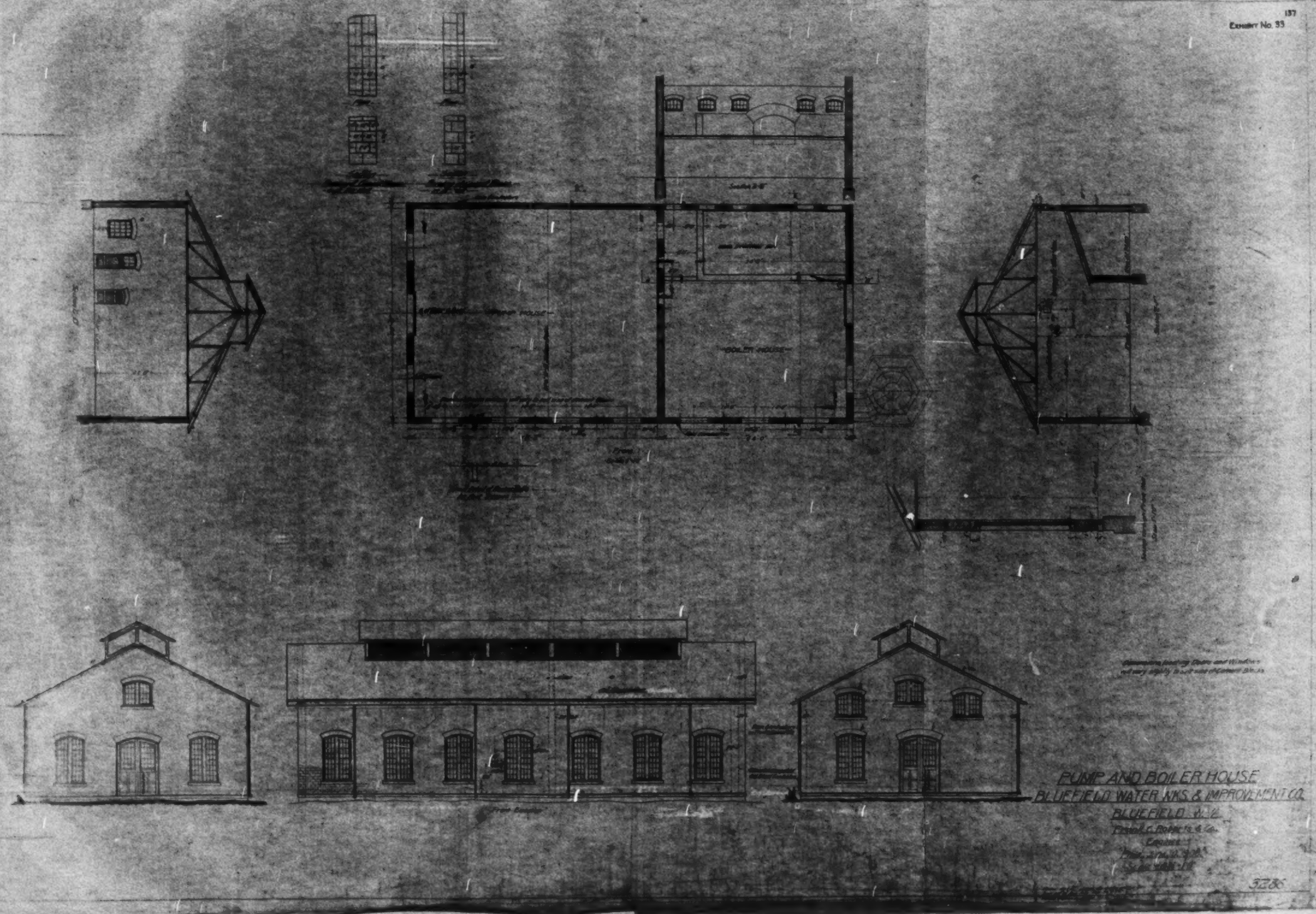
EXHIBIT No. 32



GENERAL PLAN
DETAILS OF FOUNDATIONS
BLUEFIELD WATER WKS & SEWERAGE CO.
BLUEFIELD W.VA.

3264

Exhibit No. 33



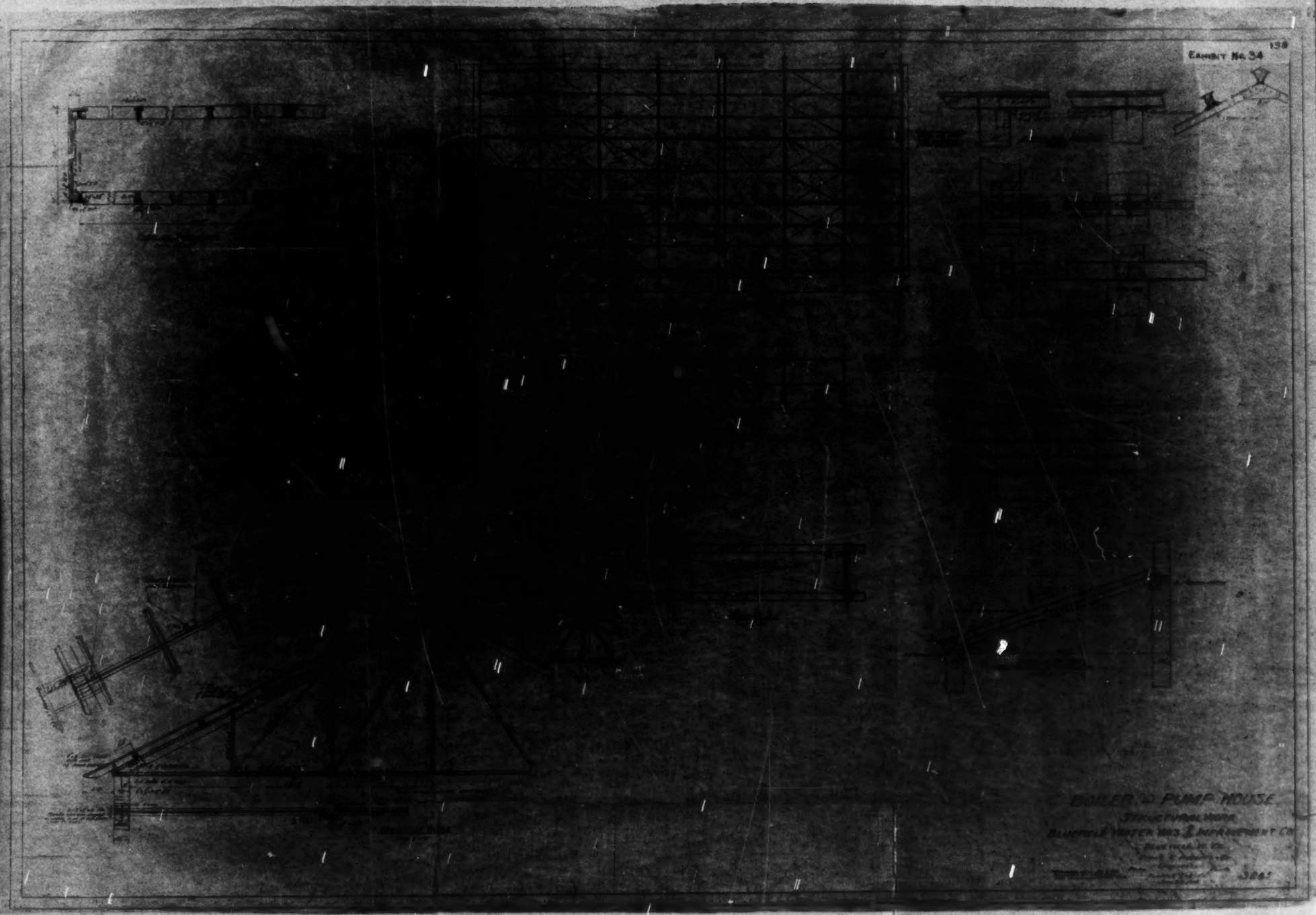


Exhibit No. 34
BOILER & PUMP HOUSE

588 [Illustration omitted.]

EXHIBIT No. 29.

View Along Route of Gravity Pipe Line.

589 [Illustration omitted.]

EXHIBIT No. 30-A.

View Along Route of Ada Pipe Line Showing Rock.

[Illustration omitted.]

EXHIBIT No. 30-B.

Crossing under N. & N. W. R. R., on the Ada Pipe Line.

(Here follow Exhibits Nos. 31, 32, 33, and 34, marked pages 590, 591, 592, and 593.)

594 [Illustration omitted.]

EXHIBIT No. 35.

Construction View, Ada Pumping Station.

[Illustration omitted.]

EXHIBIT No. 36.

Ada Pumping Station.

595 [Illustration omitted.]

EXHIBIT No. 37.

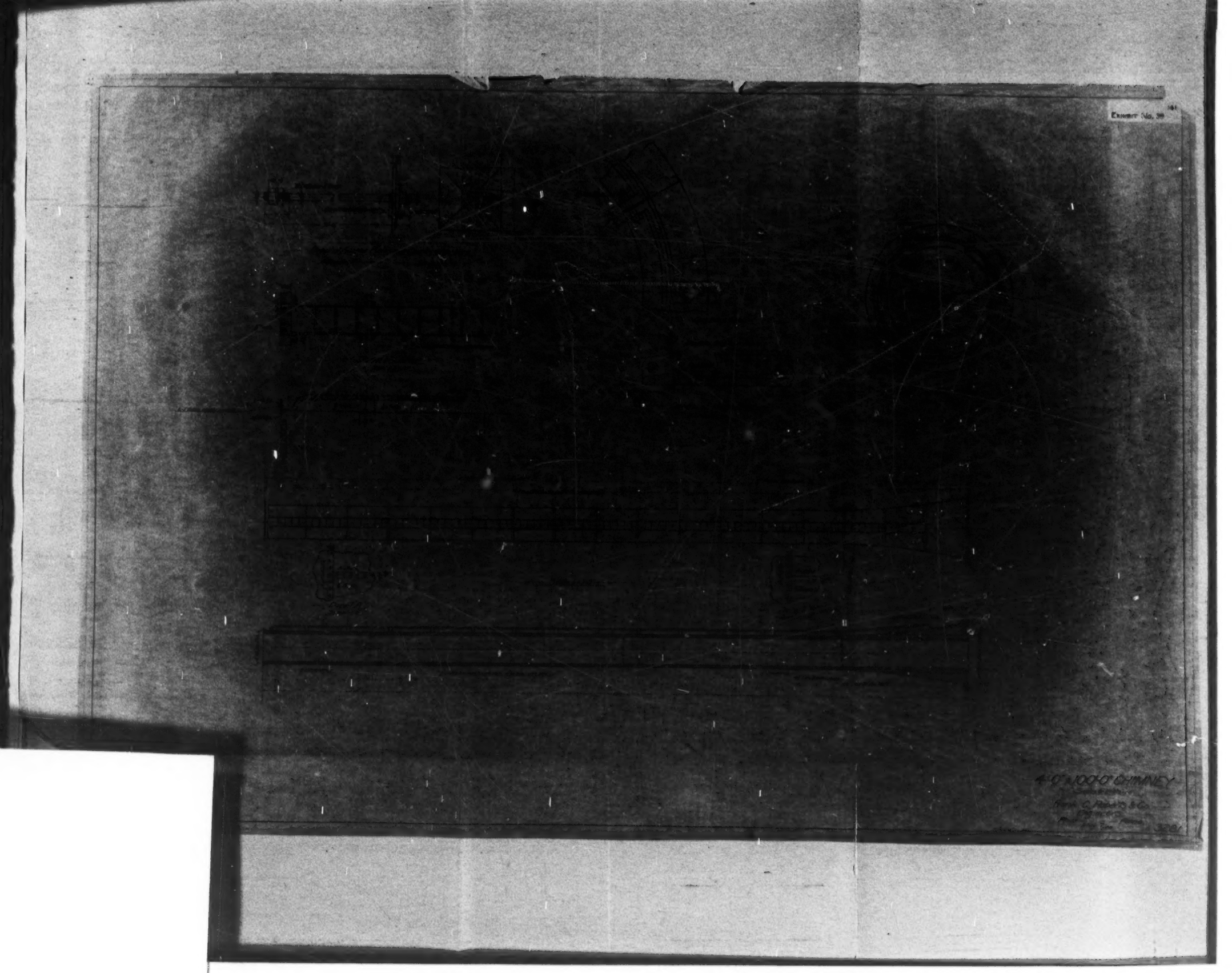
End View of Ada Pumping Station, Showing Coal Chute & Retaining Wall.

[Illustration omitted.]

EXHIBIT No. 38.

Coal Bin in Ada Pumping Station.

(Here follows Exhibit No. 39, marked page 596.)


4'-0" x 100'-0" CHIMNEY

PIPING & IMPROVEMENTS IN STATION YARD

ADA PUMPING STATION

Scale 1" = 20'-0"

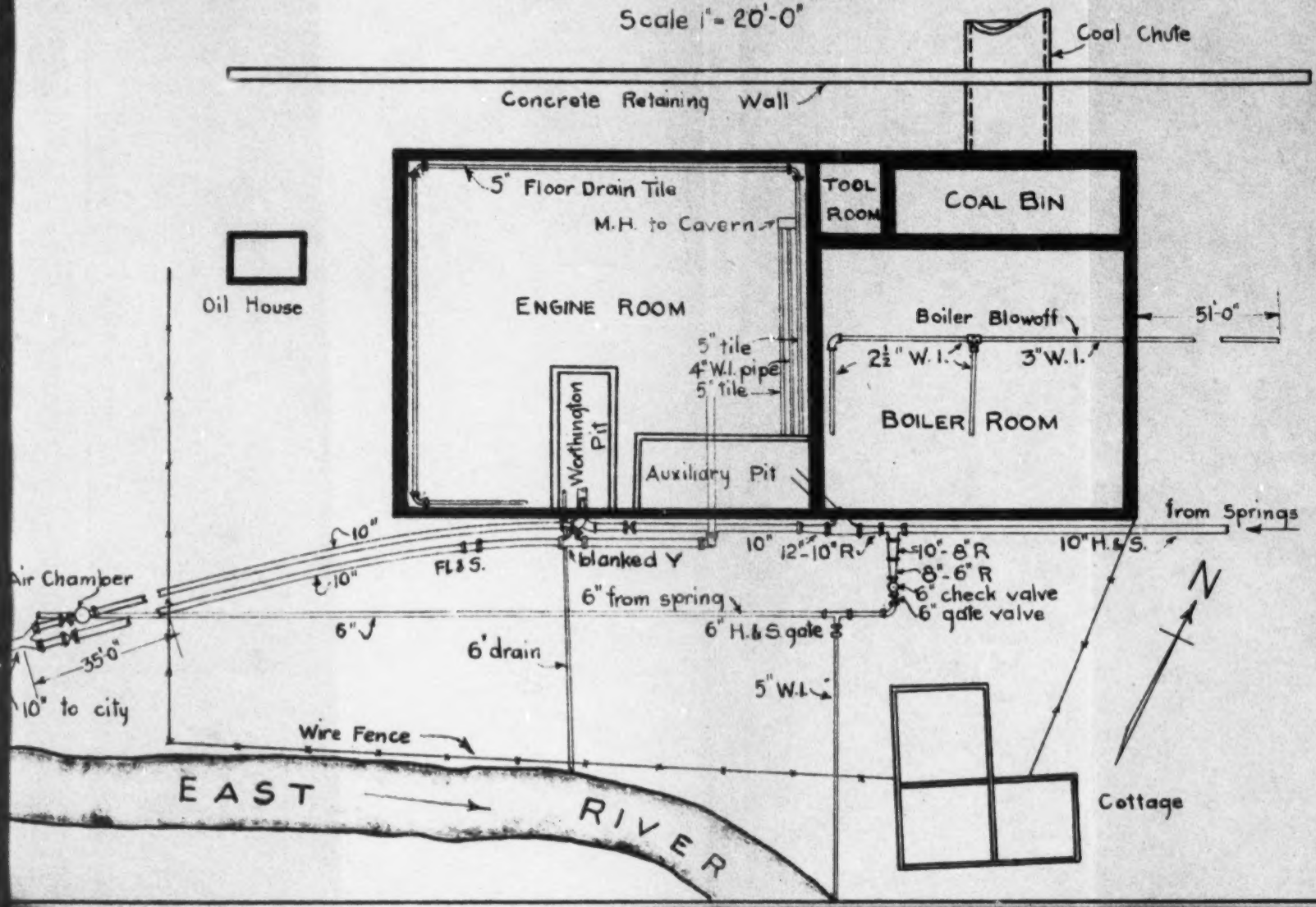


Exhibit No. 45

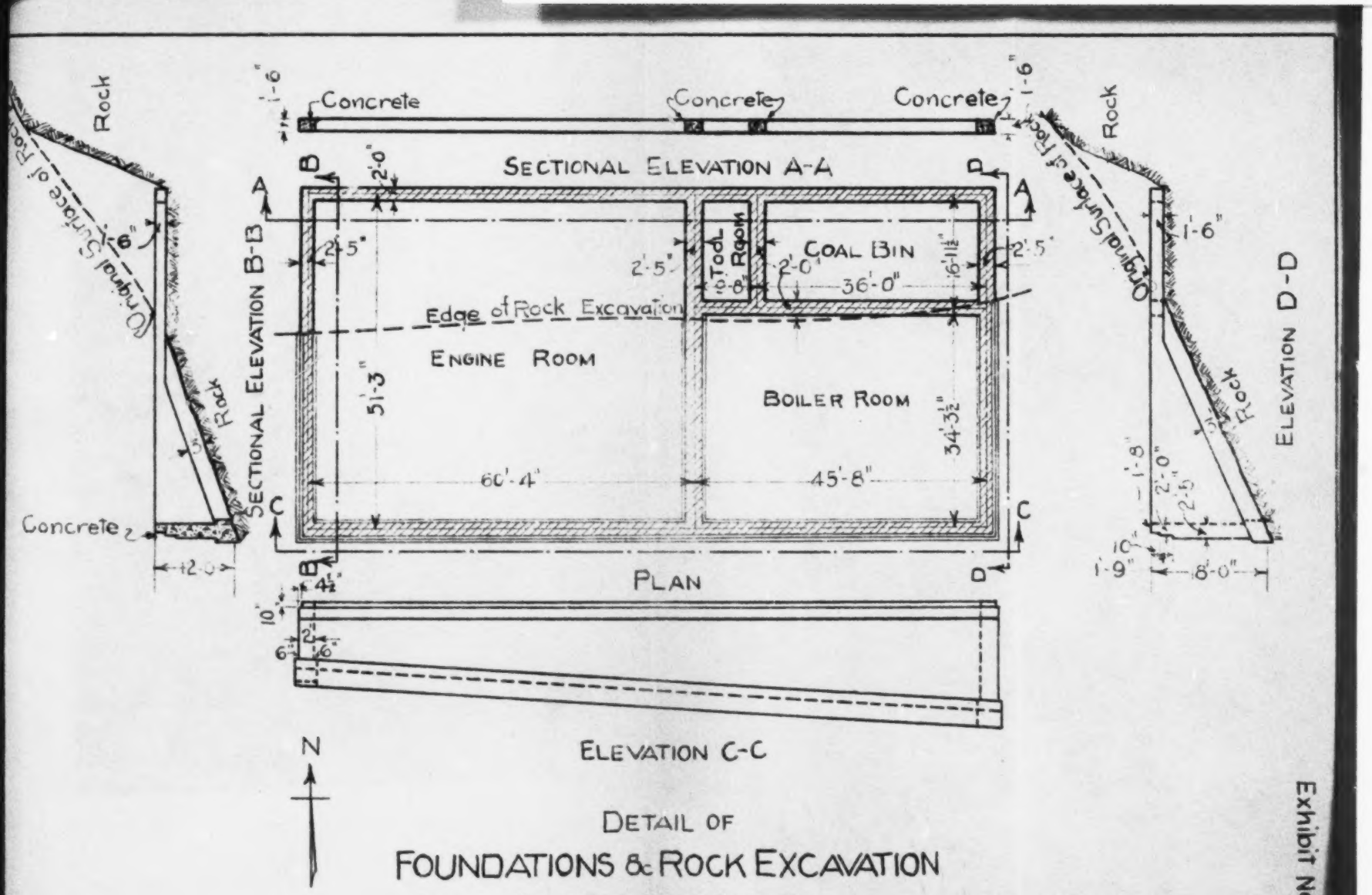
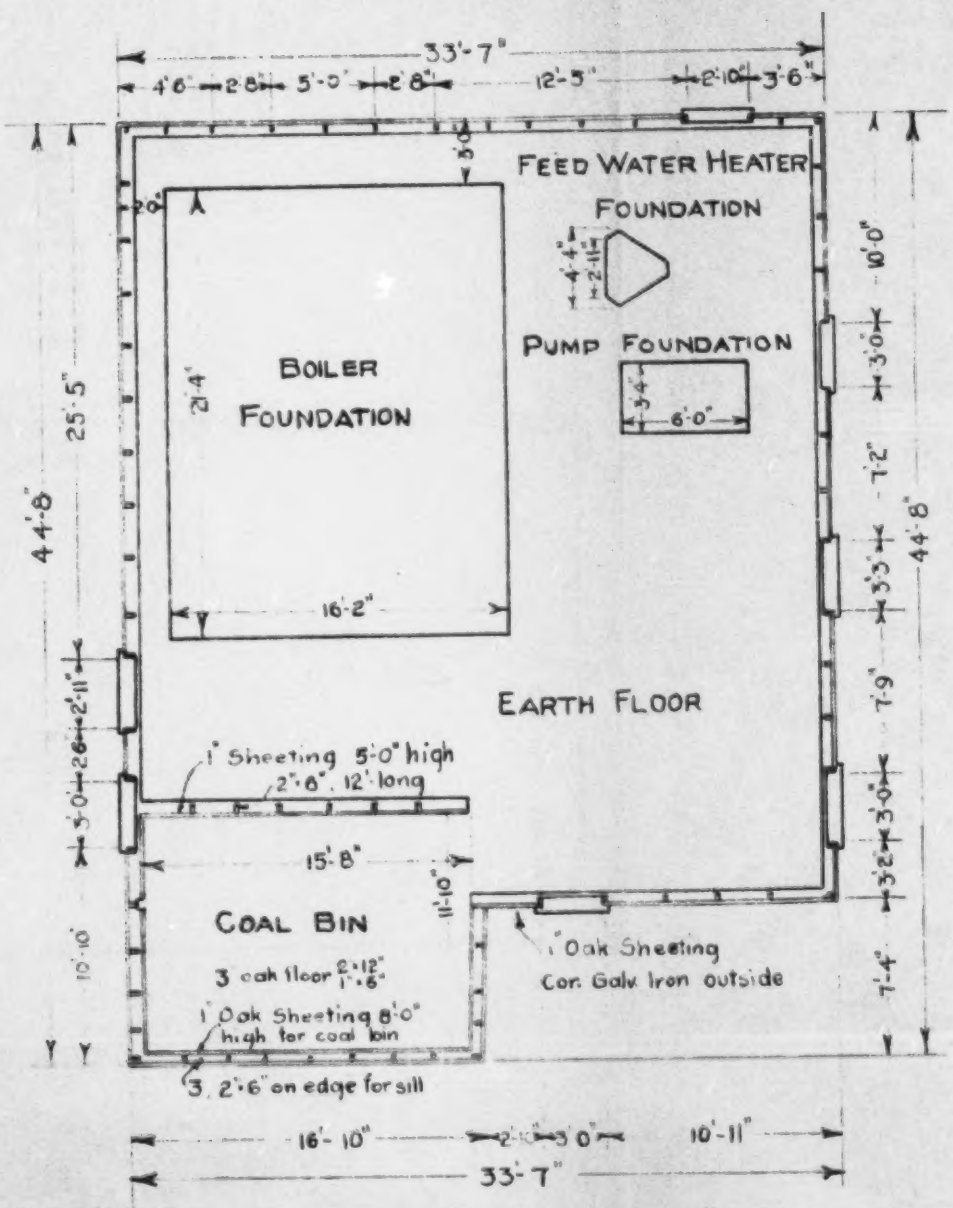

Concrete
Concrete
Concrete
1'-6"
SECTIONAL ELEVATION A-A
2'-0"
2'-5"
2'-5"
Tool Room
8"
COAL BIN
2'-0"
36'-0"
6'-11½"
2'-5"
Edge of Rock Excavation
ENGINE ROOM
BOILER ROOM
51'-3"
34'-3½"
60'-4"
45'-8"
SECTIONAL ELEVATION B-B
PLAN
4½"
10"
6"
2"
6"
ELEVATION C-C
Rock
Original Surface of Rock
6"
Rock
Concrete
12'-0"
Rock
Original Surface of Rock
1'-6"
Rock
1'-8"
2'-0"
2'-5"
1'-9"
8'-0"
ELEVATION D-D
N
DETAIL OF
FOUNDATIONS & ROCK EXCAVATION
ADA PUMPING STATION
Scale 1"=20'-0"
Exhibit No. 31

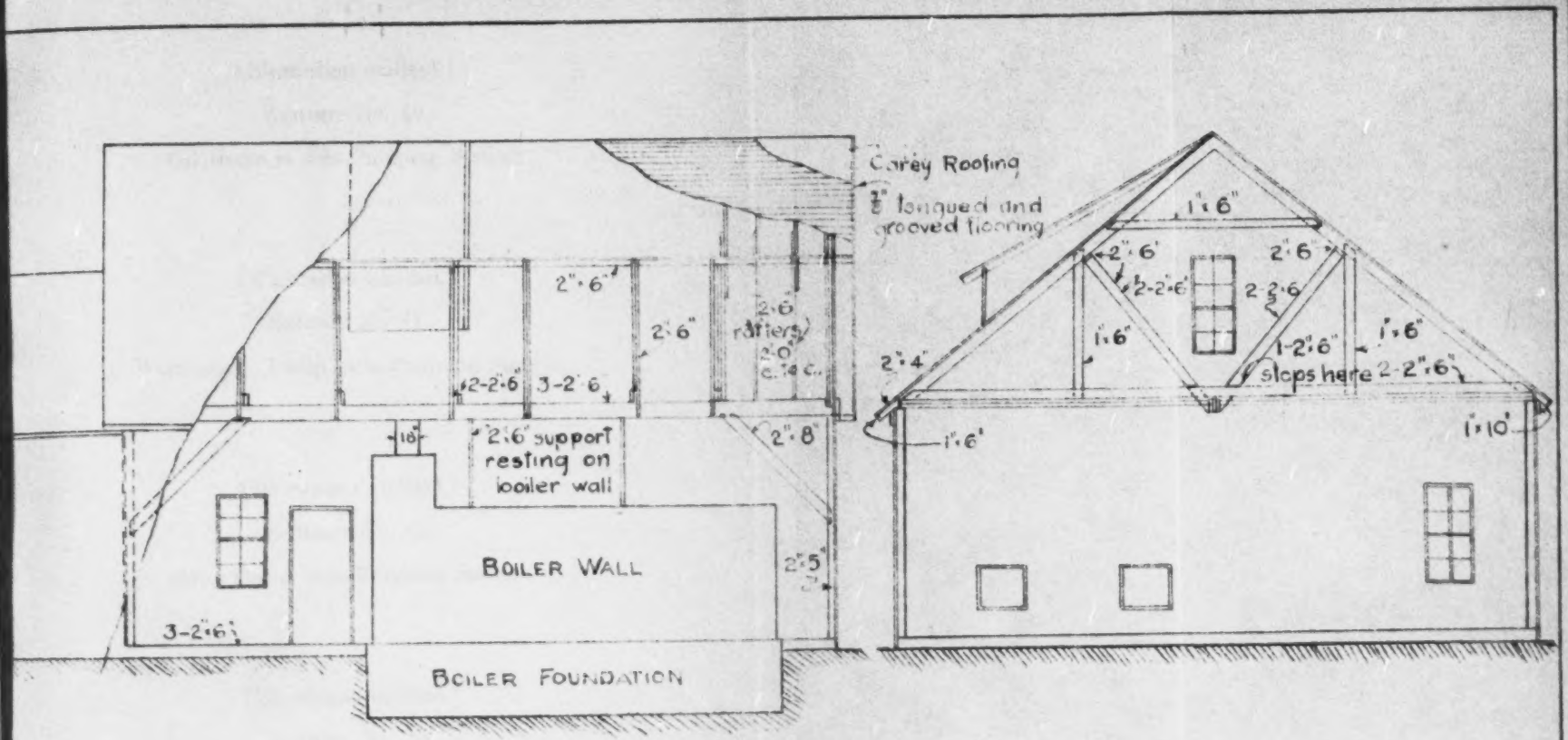
Exhibit No. 46

FLOOR PLAN

BEAVER POND PUMPING STATION

Scale $\frac{1}{8}$" = 1'-0"





SECTIONAL ELEVATIONS
OF
BEAVER POND PUMPING STATION
Scale ⅛" = 1'-0"

Exhibit No. 47

597 [Illustration omitted.]

EXHIBIT No. 40.

Oil House at Ada Pumping Station.

[Illustration omitted.]

EXHIBIT No. 41.

Worthington Pump, Ada Pumping Station.

598 [Illustration omitted.]

EXHIBIT No. 42.

Snow Pump, Ada Pumping Station.

[Illustration omitted.]

EXHIBIT No. 43.

Snow Pump, Ada Pumping Station.

599 [Illustration omitted.]

EXHIBIT No. 44.

Boiler Setting, Ada Pumping Station.

(Here follow Exhibits Nos. 45, 46, and 47, marked pages 600, 600*a*, and 600*b*.)

601 [Illustration omitted.]

EXHIBIT No. 48.

Beaver Pond Pumping Station. View from the Southwest.

[Illustration omitted.]

EXHIBIT No. 49.

Beaver Pond Pumping Station. View from the Southeast.

602 [Illustration omitted.]

EXHIBIT No. 50.

View from the West, Beaver Pond Pumping Station.

(Here follows Exhibit No. 51, marked page 603.)

Exhibit No. 51

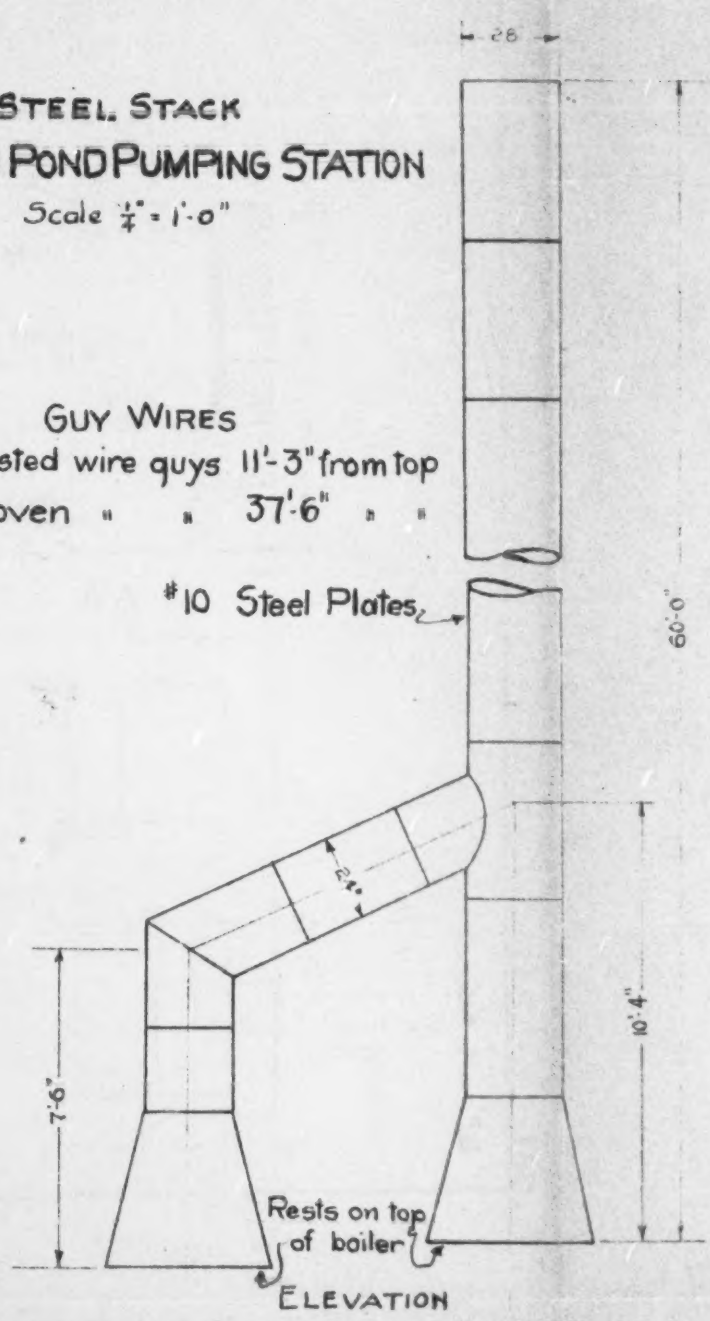
STEEL STACK
BEAVER POND PUMPING STATION

Scale $\frac{1}{4}$" = 1'-0"

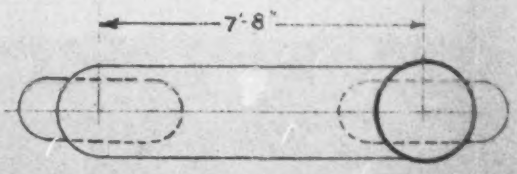
GUY WIRES

4-$\frac{3}{8}$" twisted wire guys 11'-3" from top

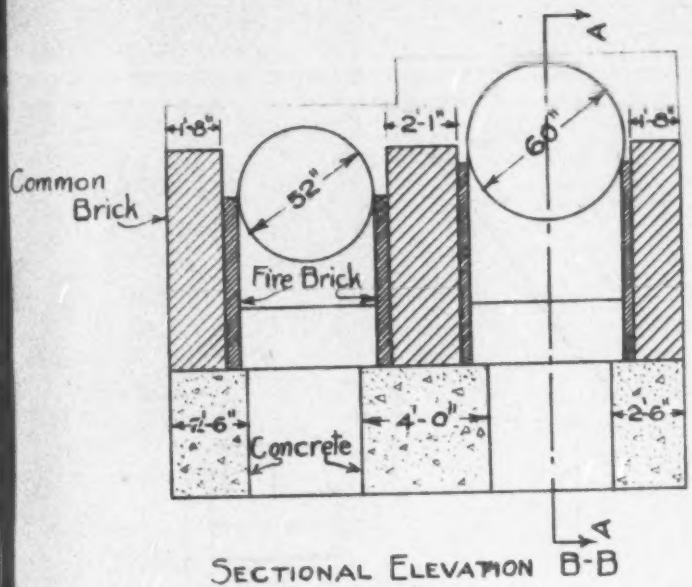
4-$\frac{3}{8}$" woven " " 37'-6" " "



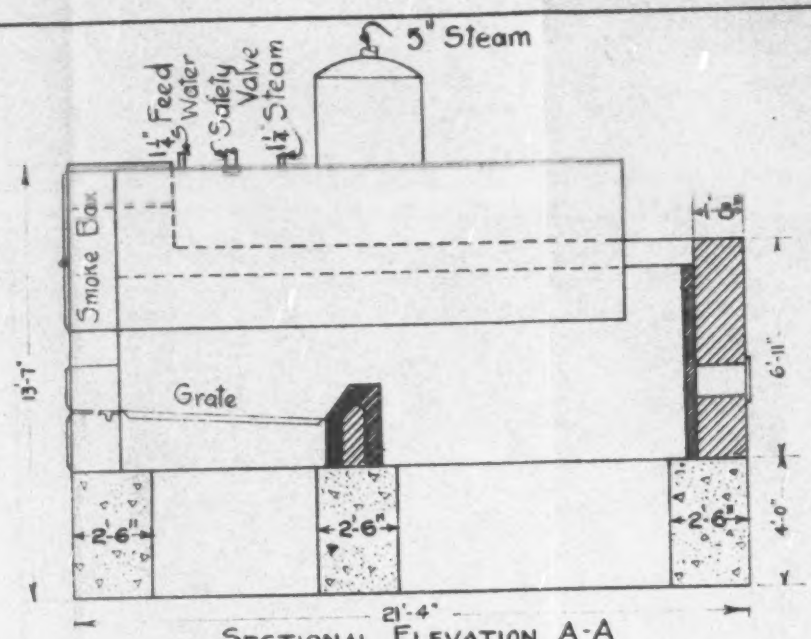
ELEVATION



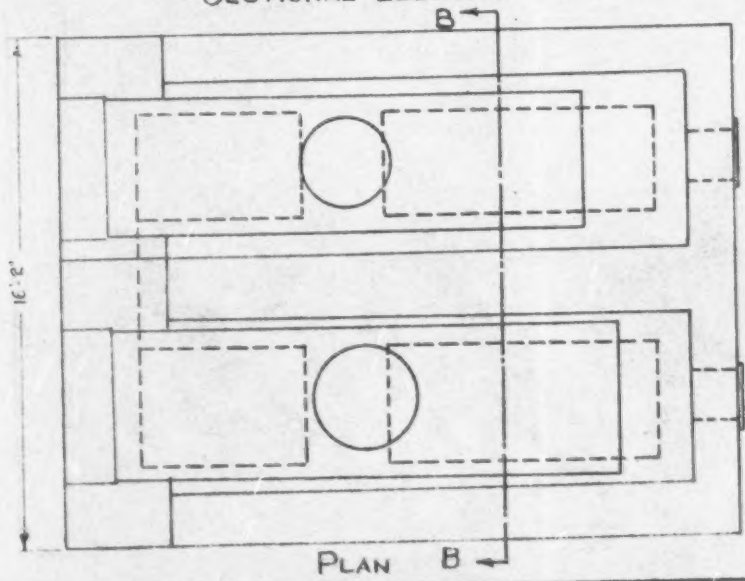
SECTIONAL PLAN



SECTIONAL ELEVATION B-B



SECTIONAL ELEVATION A-A



PLAN

20"x12" C.I. Clean out frame and door

BOILER SETTINGS

BEAVER POND PUMPING STATION

Scale $\frac{3}{16}$" = 1'-0"

Exhibit No. 54

PIPING & IMPROVEMENTS IN STATION YARD

BEAVER POND PUMPING STATION

Scale 1"=40'

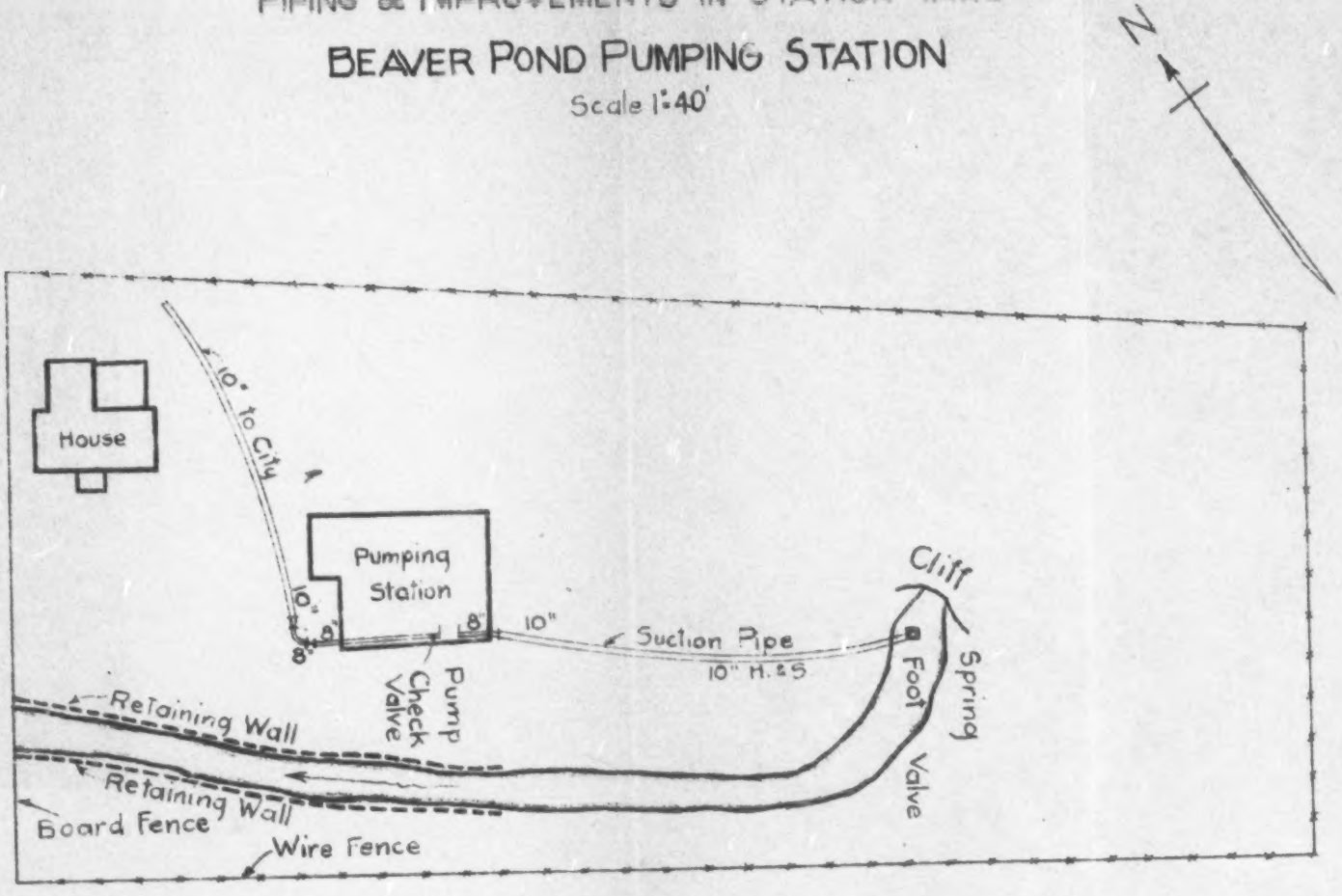
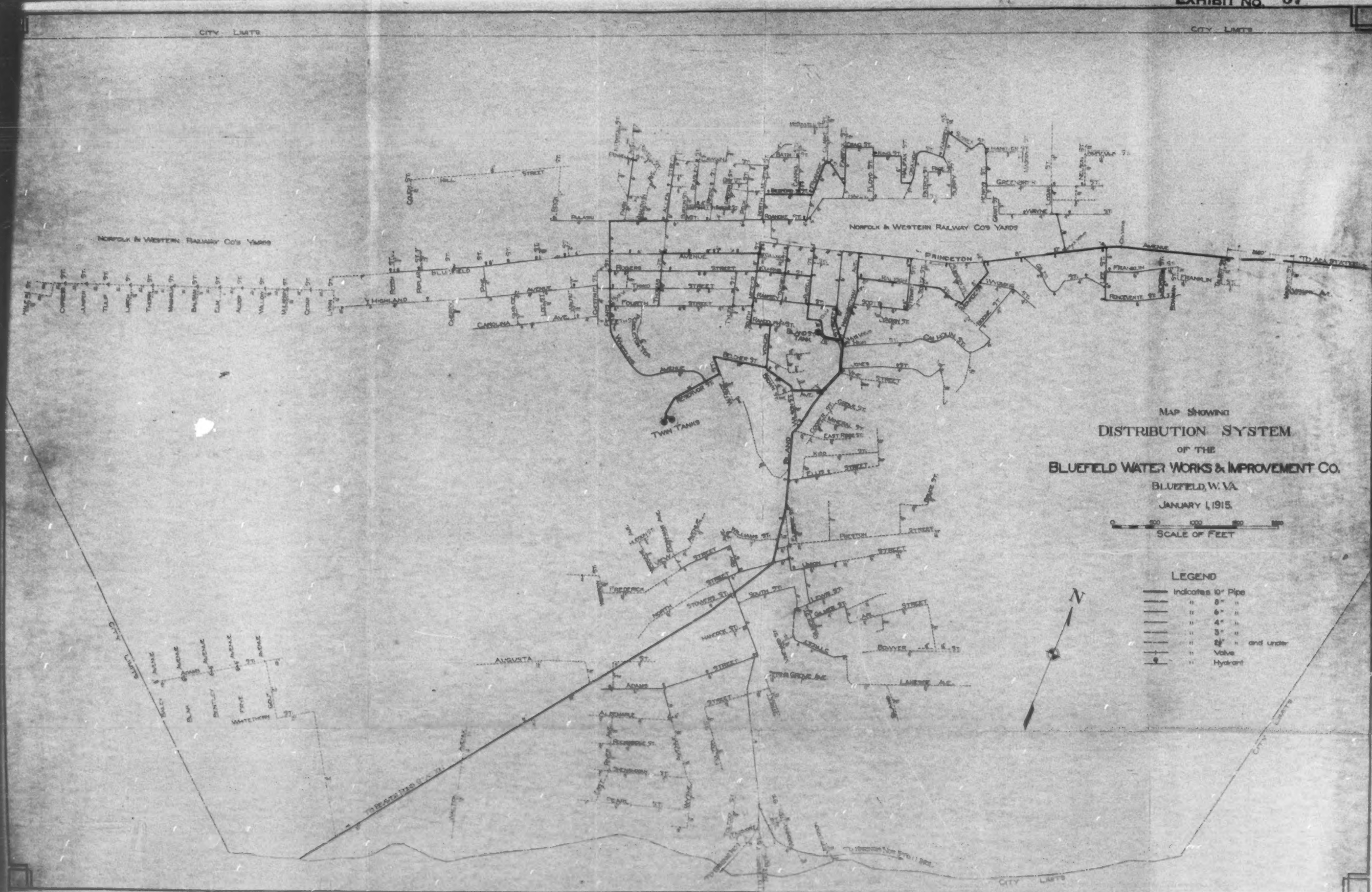


Exhibit No. 55


MAP SHOWING
DISTRIBUTION SYSTEM
OF THE
BLUEFIELD WATER WORKS & IMPROVEMENT CO.
BLUEFIELD, W. VA.
JANUARY 1, 1915.
SCALE OF FEET
LEGEND
Indicates 10" Pipe
" 8" "
" 6" "
" 4" "
" 3" "
" 2½" " and under
" Valve
" Hydrant
N
CITY LIMITS
NORFOLK & WESTERN RAILWAY CO'S YARDS
TWIN TANKS
PRINCETON
BLUEFIELD
HIGHLAND
AUGUSTA
ADAMS
FREDERICK
BOWYER
LAKESIDE AVE.
CALHOUN ST.
FRANKLIN
ROOSEVELT ST.
GREENBRIER
WAYNE ST.
HILL STREET
CAROLINA AVE.
ROGERS
THIRD STREET
FOURTH STREET
BLAND ST.
EAST RIDGE ST.
KIDD ST.
ELLIS STREET
PRESTON STREET
UNION STREET
SOUTH ST.
STOWERS ST.
NORTH STREET
HANCOCK ST.
ALBEMARLE
WHITETHORN ST.
BENTLEY AVENUE
FRYE AVENUE
GOLF AVENUE
BLAIR AVENUE
ADAMS AVENUE
WALTON AVENUE
TO BEAVER POND GLASS CO.
TO BRANCH NOT STILL DRY

604 [Illustration omitted.]

EXHIBIT No. 52.

Worthington Pump, Beaver Pond Pumping Station.

[Illustration omitted.]

EXHIBIT No. 53.

Boiler Setting, Beaver Pond Pumping Station.

(Here follow Exhibits Nos. 54, 55, and 57, marked pages 605, 606, and 607.)

608 EXHIBIT No. 58.

Itemized List of Street Mains, Showing Location, Size, and Length.

(a) 10" Cast Iron Mains.

On—	From—	To—	Length.
Princeton Ave.....	Market St.....	Giles St.	4,870'
Bland St.....	Ramsey St.....	North St.	3,310'
" "	Main	Curb	40'
Through Lots.....	North St.....	Walton Ave.	4,480'
Genoa St.....	Bland St.....	Genoa St.	830'
Belcher St.....	Genoa St.....	Ridge St.	670'
Ridge St.....	Belcher St.....	Reservoir St.	230'
Reservoir St.....	Ridge St.....	Twin Tanks	920'
			15,350'

(b) 8" Cast Iron Mains.

Princeton Ave.....	Giles St.....	Monroe St.	750'
Monroe St.....	Princeton Ave.....	Raleigh St.	620'
Raleigh St.....	Monroe St.....	Higgenbotham Ave.	1,330'
Higginbotham Ave..	Princeton Ave.....	Bland St.	1,150'
In Alley.....	Bland St. Tank....	Russell St.	360'
Russell St.....	Alley	Duhring St.	530'
Ramsey St.....	Russell St.....	Bland St.	350'
Duhring St.....	Russell St.....	Mercer St.	670'
Mercer St.....	Duhring St.....	Bluefield Ave.	200'
"	Bluefield Ave.....	Princeton St.	110'
Genoa St.....	Belcher St.....	Randolph St.	510'
Randolph St.....	Genoa St.....	Mercer St.	250'
Mercer St.....	Randolph St.....	Fourth St.	300'
Bluefield Ave.....	Mercer St.....	Thomas St.	1,160'
Wheeling Ave.....	Reservoir St.....	Pearis St.	1,520'
Pearies St.....	Wheeling Ave.....	Pulaski St.	1,340'
Pulaski St.....	Pearis St.....	Allen St.	680'
			11,840'

(c) 6" Cast Iron Mains.

Jackson St.....	Franklin St.....	Roncreverte St.	350'
Ronceverte St.....	Jackson St.....	Lee St.	720'
Lee St.....	Ronceverte St.....	Princeton Ave.	630'
Franklin St.....	Jackson St.....	Lee St.	720'
Railroad Crossing..	Princeton Ave.....	Wayne St.	465'
Stub on Princeton..	Near Lee.....	Railroad	20'

609

Wayne St.....	Crossing	Logan St.	60'
Henry St.....	Arlenbrier St.....	Hanover St.	400'
Sussex St.....	Hanover St.....	Warren St.	590'
Warren St.....	Sussex St.....	Orange St.	300'
Orange St.....	Warren St.....	Halifax St.	720'
Halifax St.....	Orange St.....	King St.	450'
King St.....	Halifax St.....	Floyd St.	330'
Floyd St.....	King St.....	Craig St.	100'
Craig St.....	Floyd St.....	Fairfax St.	350'
Fairfax St.....	Craig St.....	Roanoke St.	440'
Roanoke St.....	Fairfax St.....	Bedford St.	790'
Bedford St.....	Roanoke St.....	Mercer St.	610'

EXHIBIT No. 58—Continued.

On—	From—	To—	Length.
Carrol St.....	Bedford St.....	North	190'
Roanoke St.....	Roanoke St.....	Mercer St.	550'
Mercer St.....	"	Bedford St.	280'
Pulaski St.....	Mercer St.....	Allen St.	1,190'
Pulaski St.....	Stub	Near Peck	20'
Allen St.....	Pulaski St.....	Lawson St.	740'
Park St.....	Alley	Powell St.	450'
Scott St.....	Raleigh St.....	Princeton Ave.	120'
Stewart St.....	Scott St.....	Princeton Ave.	615'
Princeton Ave.	Stewart St.....	Bland St.	830'
Bland St.....	Princeton Ave.....	Ramsey St.	670'
Scott St.....	Stewart St.....	Alley	320'
Tazewell St.....	Duhring St.....	Princeton Ave.	340'
Russell St.....	"	"	320'
Ramsey St.....	Mercer St.....	Russell St.	690'
Mercer St.....	Ramsey St.....	Duhring St.	330'
Bland St.....	Higginbotham St...	High St.	70'
Bland St.....	" ...	Genoa St.	700'
Fourth St.....	Pearles St.....	Mercer St.	1,140'
Rogers St.....	"	"	1,790'
Bluefield Ave.....	W. of Beech St.....	Thomas St.	3,340'
Tyler St.....	Rogers St.....	Fourth St.	415'
Thomas St.....	" "	"	420'
Thomas St.....	Bluefield St.....	North	40'
Bluefield St.....	Stub	.....	40'
Beech St.....	Bulefield St.....	North	40'
Ellis St.....	Bland St.....	East	300'
Union St.....	"	"	620'
Bland St.....	Preston St.....	Union St.	310'
North St.....	Bland St.....	W. of Jefferson.....	930'
Bland St.....	Lewis St.....	Bowyer St.	1,050'
Roy Ave.....	Frederick St.....	North St.	320'
Jefferson St.....	North St.....	Adams St.	1,010'
Adams St.....	Jefferson St.....	E of East River Ave.....	1,990'
East River Ave....	At Adams.....	.....	30'
Golf Ave.....	" "	.....	24'
Frye Ave.....	" "	.....	24'
Bentley Ave.....	" "	.....	24'
Blair Ave.....	" "	.....	24'
Bailey Ave.....	" "	.....	24'
Frederick St.....	Roy Ave.....	Penn-Mar Ave.	630'
610			
Wythe Ave.....	Adams St.....	Albermarle St.	430'
Albemarle St.....	At Wythe Ave.....	.....	40'
			31,475'

(d) 4" Cast Iron Mains.

South St.....	Jefferson St.....	Bland St.	720'
Bland St.....	South St.....	Lewis St.	300'
Lewis St.....	Bland St.....	East	195'
Alley	Lewis St.....	Union St.	430'
Gilmer St.....	"	Earle St.	830'
Ellis St.....	Bland St.....	Alley	180'
High St.....	"	Charleston Ter.	1,950'
Lot $13.....	Charleston Ter.....	Boone St.	180'

EXHIBIT No. 58—Continued.

On—	From—	To—	Length.
Boone St.	Lot #13.	Wyoming St.	630'
Wyoming St.	Monroe St.	Charleston Ter.	770'
Giles St.	Princeton Ave.	Lee St.	1,300'
Wayne St.	Grant St.	Lincoln St.	960'
Logan St.	Wayne St.	Greenbrier St.	360'
Greenbrier St.	Lincoln St.	Henry St.	1,390'
Surrey St.	Orange St.	Hardy St.	520'
Hardy St.	Surry St.	Roanoke St.	1,890'
"	Stub to R. R.	At Floyd	20'
"	2 stubs to R. R.	At Roanoke	20'
Bath St.	Mercer St.	Carroll St.	360'
Mercer St.	Lawson St.	"	430'
Lawson St.	Mercer St.	Allen St.	1,145'
Bayer St.	Davidson St.	Peck St.	90'
Marshall St.	Reese St.	Burton St.	300'
Reese St.	Pulaski St.	Lawson St.	710'
Beasley St.	Marshall St.	"	535'
Burton St.	Pulaski St.	North	320'
Barger St.	"	"	20'
Baldwin St.	"	"	30'
Park Ave.	"	Alley	290'
Pulaski St.	R. R. Crossing.	Rock St.	740'
Princeton Ave.	Monroe St.	Stewart St.	870'
Princeton Ave.	Bland St.	Mercer St.	1,065'
Mercer St.	Princeton Ave.	Bluefield Ave.	140'
Princeton Ave.	Stub	At Russell St.	40'
Railroad Crossing.	Princeton Ave.	Near Mercer St.	370'
Third Street.	Chestnut St.	Tyler St.	1,680'
Thomas St.	Rogers St.	Pulaski St.	630'
Fourth St.	Thomas St.	Tyler St.	240'
Chestnut St.	Rogers St.	Carolina Ave.	560'
Rogers Street.	Pearis St.	Chestnut St.	180'
Carolina Ave.	Walnut St.	"	280'
Highland Ave.	Chestnut St.	Lynn St.	3,040'
Pine St.	Highland Ave.	Bluefield Ave.	370'
Spruce St.	At Highland Ave.		24'
Maple St.	" " "		12'
Jones St.	Bland St.	East	1,280'
			28,336'

611 3" Cast Iron Mains.

Carolina Ave.	Cherry St.	Walnut St.	1,250'
Davidson St.	Bayer St.	Day St.	320'
Day St.	Peck St.	West	300'
Peck St.	Pulaski St.	Day St.	450'
Bedford St.	Peck St.	Mercer St.	210'
Mercer St.	Bedford St.	Lawson St.	350'
Carroll St.	"	Bath St.	440'
Bedford St.	Mercer St.	Roanoke St.	590'
Roanoke St.	Roanoke St.	Clarke St.	810'
Clarke St.	McDowell St.	Roanoke St.	420'
Fairfax St.	Hardy St.	"	160'
Floyd St.	"	King St.	500'
Orange St.	"	Halifax St.	190'
Patrick St.	"	Page St.	320'
Page St.	Patrick St.	Surry St.	280'
Henry St.	Hardy St.	Greenbrier St.	150'

EXHIBIT No. 58—Continued.

On—	From—	To—	Length.
Hardy St.....	Henry St.....	Grant St.	145′
Grant StN.....	Hardy St.	Wayne St.	180′
Wayne St.....	Grant St.....	East	300′
Scott St.....	Princeton Ave.....	Higginbotham Ave.	940′
Summers St.....	"	Monroe St.	470′
Ronceverte St.....	Jackson St.....	East	230′
Fourth St.....	Thomas St.....	Tyler St.	360′
Hanover St.....	Halifax St.....	Madison St.	440′
Madison St.....	Hanover St.....	South	120′
Tazewell St.....	Duhring St.....	Ramsen St.	340′
Poplar St.....	Bluefield Ave.....	North	230′
Total			10,495′

Total Cast Iron Mains.

15,350	lineal	feet	of 10"	mains.
11,840	"	"	" 8"	"
31,475	"	"	" 6"	"
28,336	"	"	" 4"	"
10,495	"	"	" 3"	"
97,496	"	"	Total Cast Iron Mains.	

612 (b) 2½" Galvanized Iron Mains.

Poplar St.....	Bluefield Ave.....	North	220′
Total			220′

2" Galvanized Iron Mains.

Walnut St.....	Bluefield Ave.....	North	180′
Wythe Ave.....	Shenandoah ...	Pearl St.	410′
Pearl St.....	Wythe Ave.....	East River Ave.....	710′
Shenandoah St.....	"	West	500′
Golf Ave.....	Adams St.....	Whitethorn St.	690′
Whitethorn St.....	Golf Ave.....	Country Club	460′
Total			2,950′

1½" Galvanized Iron Mains.

Locust St.....	Highland Ave.....	Carolina Ave.	500′
Walnut St.....	"	"	150′
Couch St.....	Hill Ave.....	South	270′
Hill Ave.....	Couch St.....	Rorer St.	1,930′
Rock St.....	Pulaski St.....	Hill Ave.	630′
Pendleton Ter.....	Fifth St.....	Hinton St.	580′
Alley	Rogers St.....	Third St.	210′
Clarke St.....	McDowell St.....	North	140′
McDowell St.....	Clarke St.....	Mercer St.	330′
Warren St.....	Sussex St.....	North	240′
Logan St.....	Greenbrier St.....	"	750′
Nelson St.....	"	Norfolk St.	300′
Alley	"	Wayne St.	270′

EXHIBIT No. 58—Continued.

On—	From—	To—	Length.
Market St.	Princeton Ave.	Virginia Ave.	390'
Virginia Ave.	Market St.	Baltimore St.	180'
Franklin St.	Bowman St.	Talbot St.	120'
Bowman St.	Franklin St.	Franklin St.	150'
Franklin St.	Bowman St.	Jackson St.	180'
Alley	Calhoun St.	Jones St.	1,000'
Randolph St.	Genoa Ave.	Alley	120'
Alley	Randolph St.	Ramsey St.	90'
Tank St.	Tank	South	180'
Alley	Genoa St.	East	610'
Wilson St.	Bland St.	Genoa St.	430'
Lot No. 3.	Wilson St.	West	160'
Brown St.	Lot No. 3.	Genoa St.	310'
Ridge St.	Reservoir St.	Bland St.	1,000'
Mineral St.	Cooper St.	East	310'
Kidd St.	"	"	890'
Cooper St.	Ellis St.	Kidd St.	250'
Alley	Kidd St.	North	290'
Douglas St.	Preston St.	"	370'
Alley	Douglas St.	Bruce St.	340'
Bruce St.	Alley	North	150'
613			
Union St.	Cemetery	East	870'
Earl St.	Gilmer St.	"	980'
Lot- 17 & 16.	Earl St.	Bowyer St.	560'
Bowyer St.	Bland St.	Oakhurst Cir.	1,570'
Bland St.	Bowyer St.	South	1,240'
Adams St.	Bland St.	Vineyard St.	160'
Vineyard St.	Adams St.	South	110'
Albemarle St.	6" drain	Fulton St.	550'
Fulton St.	Albemarle St.	Olive St.	330'
Williams St.	Bland St.	Roy Ave.	620'
Stowers St.	Jefferson St.	West	430'
North St.	"	Augusta St.	1,210'
Frederick St.	Woodrow St.	Woodland St.	500'
Woodrow St.	Frederick St.	Alley	210'
View Ave.	Penn-Mar Ave.	East	670'
Augusta	10" Main	Walton Ave.	1,600'
Wythe Ave.	Albemarle St.	Rockbridge St.	380'
East River Ave.	"	Shenandoah St.	680'
Shenandoah St.	East River Ave.	East	460'
Albemarle St.	Wythe Ave.	Clinton Ave.	1,115'
Augusta St.	East River Ave.	Cemetery	520'
Walton Ave.	10" Main	South	940'
Adams St.	Golf Ave.	Baily Ave.	1,550'
Total			31,055'

1¼" Galvanized Iron Mains.

Hale St.	Walters Ave.	Adams Ave.	225'
Walters Ave.	Alley	West	340'
Alley	Between Walters	Bluefield Ave.	215'
"	" "	"	170'
"	South of Bluefield Ave.		3,450'

EXHIBIT No. 58—Continued.

On—	From—	To—	Length.
Cypress St.....	Bluefield Ave.....	Carolina Ave.	20′
Juniper St.....	"	"	20′
Tulip St.....	"	"	20′
Larch St.....	"	"	250′
Thorn St.....	"	"	160′
Magnolia St.....	"	"	20′
Balsam St.....	"	"	150′
Elm St.....	"	"	180′
Alder St.....	"	"	20′
Willow St.....	"	"	80′
Mulberry St.....	"	"	260′
Cedar St.....	"	"	20′
Lynn St.....	"	"	250′
Highland Ave.....	Maple St.....	Lynn St.	190′
Park Ave.....	Powell St.....	Powell St.	260′
Baldwin Ave.....	Pulaski St.....	Alley	260′
Alley	Baldwin Ave.....	Park Ave.	190′
614			
Nelson St.....	Norfolk St.....	North	110′
Norfolk St.....	Nelson St.	Putnam St.	340′
Talbot St.....	Franklin St.....	Princeton Ave.	320′
Raleigh St.....	Monroe St.....	Boone St.	390′
Jones St.....	Alley	East	110′
Vine St.....	Bland St.....	Alley	260′
Alley	Scott St.....	Yadkin St.	170′
McCullouch St.....	Tazewell St.....	West	140′
Alley	Genoa St.....	East	160′
East Ridge St.....	Bland St.....	"	700′
Cooper St.....	East Ridge St.....	Mineral St.	240′
Ellis St.....	Bland St.....	East	610′
Alley	Ellis St.....	Kidd St.	160′
Bland St.....	Williams St.....	Preston St.	330′
Preston St.....	10″ Main.....	East	2,000′
Eldridge St.....	Preston St.....	North	220′
Alley	Gilmer St.....	East	530′
Lakeside Ave.....	Bland St.....	"	1,010′
Spring Grove Ave...	Jefferson St.....	Alley	180′
Jefferson St.....	Spring Grove Ave..	Cumberland G. Road.....	590′
Albemarle St.....	6″ Main.....	Jefferson St.	280′
Fulton St.....	Olive St.....	South	450′
Washington St.....	Ellwood St.....	Cumberland G. Road.....	610′
Fairmont St.....	Toledo St.....	Washington St.	220′
Toledo St.....	Fairmont St.....	Ellwood St.	630′
Wythe Ave.....	Rockbridge St.....	Shenandoah St.	370′
"	Pearl St.....	Alley	220′
Alley	Wythe Ave.....	West	200′
Pearl St.....	East River Ave.....	Wythe Ave.	365′
Rockbridge St.....	" " "	East	470′
"	" " "	West	230′
Walton Ave.....	10″ Main.....	South	250′
Total			19,615′

EXHIBIT No. 58—Continued.

1" Galvanized Iron Mains.

On—	From—	To—	Length.
Bluefield Ave.	Lynn St.	Beech St.	720'
McCullouch St.	Russell St.	East	200'
Mercer St.	Randolph St.	South	100'
Cooper St.	East Ridge St.	"	120'
"	Mineral St.	Grove St.	240
Grove St.	Cooper St.	East	280'
Spring Grove Av.	Alley	Lake St.	570'
Fairmont St.	Washington St.	Toledo St.	180'
Rose St.	Fairmont St.	South	470'
Alley	4" Main	Fairmont St.	130'
Williams St.	Bland St.	Roy Ave.	50'
Roy Ave.	Williams St.	Frederick St.	80'
Penn-Mar Ave.	Frederick St.	Point St.	550'
Pearl St.	East River Ave.	West	230'
East River Ave.	Shenandoah St.	Pearl St.	400'
Walton Ave.	10" Main	North	150'
Total			4,470'

615

¾" Galvanized Iron Mains.

Beech St.	Bluefield Ave.	North	230'
Spruce St.	Highland Ave.	Carolina Ave.	150'
Cherry St.	"	"	260'
North Powell St.			280'
Alley	N. Powell St.	Park Ave.	180'
"	N. of Park Ave.		300'
"	W. " " "		370'
Baldwin Ave.	Alley	Powell St.	370'
Powell St.	Baldwin Ave.	Park Ave.	350'
"	Park Ave.	West	90'
Barge St.	Davidson St.	"	110'
Peck St.	Day St.	Lawson St.	170'
Alley	Lawson St.	North	180'
Carroll St.	Bath St.	Mercer St.	140'
Alley	Greenbrief St.	Wayne St.	380'
Vine St.	Alley	East	450'
Alley	Vine St.	Cooper St.	120'
Alley	Genoa St.	East	230'
Brown St.	Lot 3	South	40'
Ridge St.	Reservoir St.	Bland St.	680'
Alley	Earl St.	South	270'
Jefferson St.	At	Cumberland G. Road	70'
Alley	Woodrow St.	East	400'
View Ave.	Spokane Ave.	Penn-Mar Ave.	275'
Spokane Ave.	Hudson St.	View Ave.	370'
Hudson St.	Spokane Ave.	Delaware Ave.	140'
East River Ave.	Adams St.	Augusta St.	330'
Shenandoah St.	East River Ave.	West	180'
Total			7,115'

EXHIBIT No. 58—Continued.

½" Galvanized Iron Mains.

On—	From—	To—	Length.
Walnut St.	Bluefield Ave.	Highland Ave.	150′
Chestnut St.	Carolina Ave.	South	100′
Fifth Ave.	Pearis St.	East	110′
Allen St.	Lawson St.	North	130′
Alley	Allen St.	East	130′
"	"	"	160′
Beasley St.	Lawson St.	North	90′
Fairfax St.	Craig St.	McDowell St.	220′
Franklin St.	Talbot St.	East	240
Yadkin St.	Alley	Stewart St.	290′
McCullouch St.	Mercer St.	East	100′
Tyler St.	Fourth St.	Holly St.	130′
Alley	Genoa St.	North	240′
"	Preston St.	"	480′
Lewis St.	Alley	East	390′
Gilmer St.	Lewis St.	Gilmer St.	190′
Hancock St.	Jefferson St.	West	350
Frederick St.	Woodland St.	Peen-Mar Ave.	560′
Total			4,060′

616 *Total Galvanized Iron Mains.*

220	lineal feet of	2½"	mains.
2,950	" "	2"	"
31,055	" "	1½"	"
19,615	" "	1¼"	"
4,470	" "	1"	"
7,115	" "	¾"	"
4,060	" "	½"	"
69,485	" "	total Galvanized Iron Mains.	

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EXHIBIT No. 58B.

Table Showing Age of C. I. Mains.

Years laid.	Sizes. 3".	4".	6".	8".	10".	Weight.
1890-1894 incl.	10,265′	7,225′	670′	3,660′	7,830′	486.3 tons
1895-1899 "	230′	1,010′	3,340′	2,045′	.....	116.9 "
1900-1904 "	.....	6,806′	1,990′	.....	4,870′	262.3 "
1905-1909 "	.....	11,515′	8,100′	560′	8,650′	357.8 "
1910-1914 "	.....	1,780′	17,375′	5,575′	.....	441.0 "
Total	10.495′	28,336′	31,475′	11,840′	15,350′	1,664.3 "

Weighted Average Age of Cast Iron Mains, 12.0 years.

Galvanized Iron Mains assumed to be the same age.

EXHIBIT No. 59.

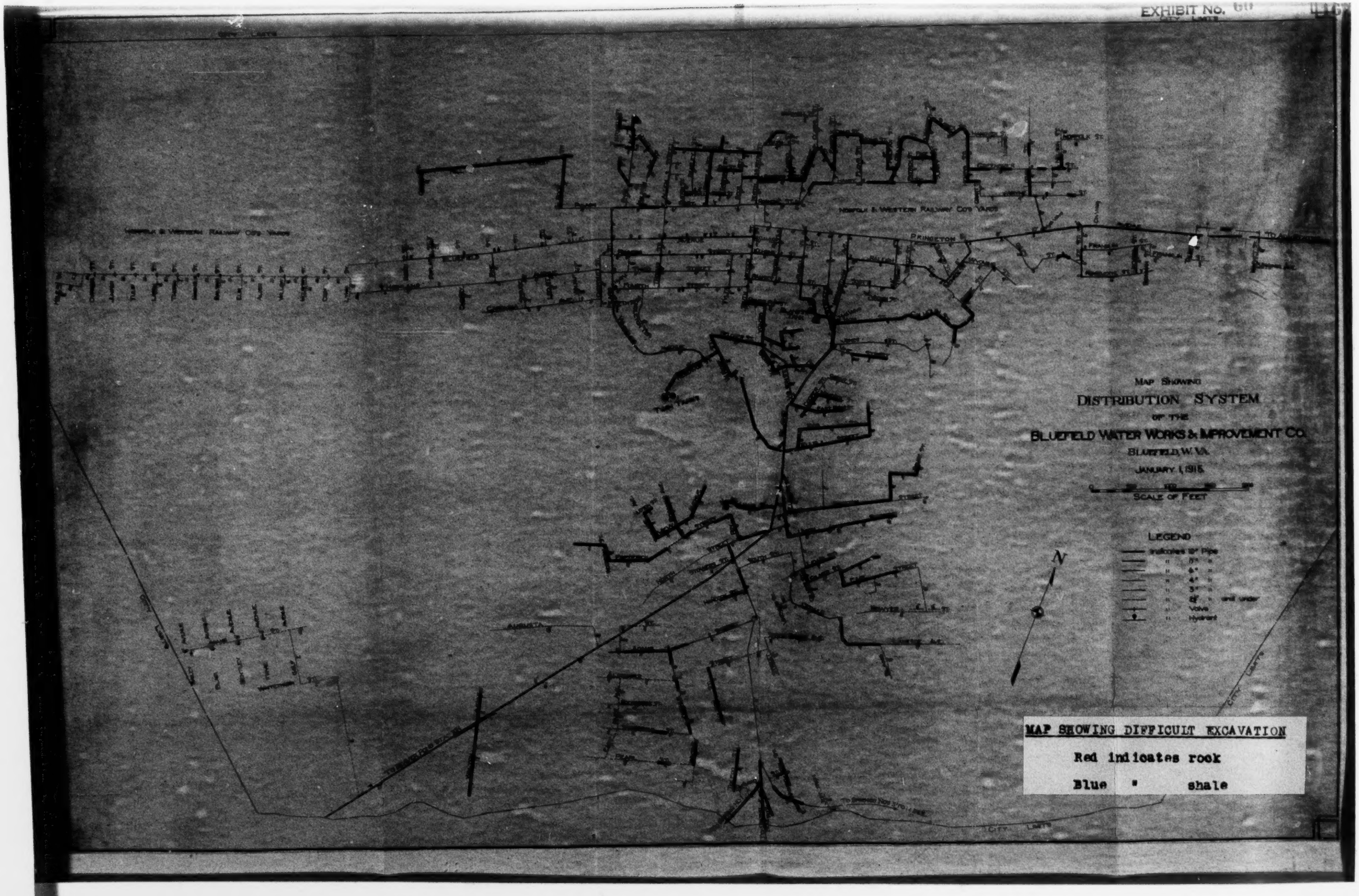
Summarized List of Specials.

No.	Kind.	Size.	Weight, per special, lbs.	Total weight, lbs.
4	Tees	10″ x 10″ x 8″	389	1,556
5	"	10″ x 10″ x 6″	371	1,855
7	"	8″ x 8″ x 8″	301	2,107
5	"	8″ x 8″ x 6″	278	1,390
5	"	8″ x 8″ x 4″	262	1,310
30	"	6″ x 6″ x 6″	203	6,090
20	"	6″ x 6″ x 4″	185	3,700
21	"	4″ x 4″ x 4″	125	2,625
8	"	4″ x 4″ x 4″	121	968
7	"	3″ x 3″ x 3″	92	644
2	Crosses	10″ x 6″	424	848
3	"	8″ x 8″	378	1,134
6	"	8″ x 6″	333	1,998
3	"	6″ x 6″	259	777
3	"	4″ x 4″	164	492
1	"Y" Branches	10″ x 10″ x 10″	434	434
1	"	8″ x 8″ x 4″	221	221
2	"	6″ x 6″ x 6″	181	362
1	"	4″ x 4″ x 4″	103	103

EXHIBIT No. 59—Continued.

No.	Kind.	Size.	Weight, per special, lbs.	Total weight, lbs.
3	¼ bends (90°)	10″	278	834
2	"	8″	200	400
17	"	6″	130	2,210
9	"	4″	82	738
5	"	3″	65	325
2	⅛ bends (45°)	10″	202	404
6	"	8″	150	900
13	"	6″	105	1,365
14	"	4″	66	924
4	"	3″	53	212
2	1/16 bends (22½°)	10″	202	404
8	"	8″	150	1,200
27	"	6″	105	2,835
10	"	4″	66	660
6	"	3″	53	318
1	Reducers	10″–8″	201	201
11	"	8″–6″	150	1,650
1	"	8″–4″	132	132
35	"	6″–4″	104	3,640
26	"	4″–3″	70	1,820

EXHIBIT No. 619



4	Plugs	8″	24	96
18	"	6″	14	252
21	"	4″	8	168
6	"	3″	5	30
30	Sleeves	10″	123	3,690
24	"	8″	104	2,496
63	"	6″	68	4,284
57	"	4″	47	2,679
21	"	3″	36	756
	Total Weight of Specials			64,237

(Here follows Exhibit No. 60, marked page 620.)

Itemized List of Difficult Excavation.

(*a*) Rock Trenches.

On—	From—	To—	Size pipe.	Length.	Depth.
Giles St.	Lee St.	Bend	4″	150′	2½
Bland St.	Hyd. Valve	Jones St.	6″	320	3
"	" "	"	10″	330	3
Higginbotham Ave.	Bland St.	Scott St.	8″	60	3
Lewis St.	Alley	East	½″	390	2
Alley	Lewis St.	Gilmer St.	4″	190	2½
Earl St.	Gilmer St.	Earl St.	4″	310	2½
Alley	Earl St.	"	1½″	270	2
Earl St.	"	"	1½″	155	2
Bland St.	Bowyer St.	South	1½″	600	2
Hancock St.	Jefferson St.	West	½″	90	2
Jefferson St.	Hancock St.	South St.	6″	280	3
"	North St.	Stowyer St.	6″	100	3
Walton Ave.	All	1½″, 1¼″ & 1″		680	2
Adams St.	East River Ave.	Jefferson St.	6″	190	3
Wythe Ave.	Adams St.	Albermarle St.	6″	40	3
Shenandoah St.	East River Ave.	Wythe Ave.	2″	150	2
Wythe Ave.	Shenandoah St.	Pearl St.	2″	410	2
Pearl St.	Wythe Ave.	East River Ave.	2″	250	2
Wythe Ave.	Pearl St.	Adams St.	1½″ & 1¼″	450	2
Fulton St.	Albemarle St.	Olive	1½″ & 1¼″	265	2
Toledo St.	Elwood St.	Fairmont St.	1¼″	160	2

Fairmont St.	Washington St.	Rose St.	1¼″	30	2
Washington St.	Turnpike	Elwood St.	1¼″	305	2
Spring Grove Ave.			1″	100	2
Rose St.	Turnpike to	Fairmont St.	1″	470	2
Wayne St.	In Lincoln St.		4″	30	3
Logan St.	Wayne St.	Greenbrier St.	4″	360	2½
"	At York St.		1½″	75	2½
Orange St.	Warren St.	Hardy St.	6″	20	3
Alley	Park St.	S. Powell St.	¾″	370	1½
N. Powell St.	Exetor St.	Powell St.	¾″	180	1½
Powell St.	N. Powell St.	Park St.	¾″	180	1½
Park St.	Powell St.	S. Powell St.	1¼″	260	1½
S. Powell St.	N. Powell St.	Park St.	¾″	90	1½

1,080 lineal feet of trench 1½ ft. deep.
4,775 " " " " 2 " "
985 " " " " 2½ " "
1,370 " " " " 3 " "

8,210 Total lineal feet of Rock Excavation.

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(*b*) Shale Trenches.

Boone St.	Wyoming St.	Lot #13	4″	100′	3′
Lot #13	Boone St.	Charleston Ter.	4″	180	3
High St.	Higginbotham Ave.	Calhoun St.	4″	840	3
Calhoun St.	High St.	Charleston Ter.	4″	1,110	3
Jones St.	Calhoun St.	Jones St.	1½″	130	2
Genoa St.	Randolph St.	Belcher St.	8″	510	3
Randolph St.	Mercer St.	Genoa St.	8″	250	3

EXHIBIT No. 61—Continued.

On—	From—	To—	Size pipe.	Length.	Depth.
Tank Lot	Russell St.	Bland St. Tank	8"	360	3
Tank St.	Bland St.	West	½"	160	2
Vine St.	"	East	1¼"	120	2
"	"	"	¾"	275	2
Brown St.	Ridge St.	Wilson St.	¾"	40	2
"	Lot No. 3	Genoa St.	1½"	310	2
Lot No. 3	Wilson St.	Brown St.	1½"	160	2
Genoa St.	"	Bland St.	10"	370	3
Alleys	Genoa St.	North	½"	150	2
"	"	East	1½"	180	2
"	"	"	1¼"	290	2
"	"	"	1½"	290	2
"	"	"	¾"	230	2
Belcher St.	"	Ridge St.	10"	670	3
Ridge St.	Belcher St.	Reservoir St.	10"	230	3
Ridge St. & Alley	Ridge St.	Bland St.	¾"	680	2
" " " "	"	"	1½"	1,000	2
Ridge St.	Reservoir St.	East	¾"	90	2
Reservoir St.	Ridge St.	Twin Tanks	10"	920	3
East Ridge St.	Bland St.	"E" St.	1¼"	700	2
Cooper St.	East Ridge St.	Mineral St.	1¼"	240	2
Mineral St.	Cooper St.	East	1½"	330	2
Cooper St.	East Ridge St.	South	1"	120	2
Kidd St.	All		1½"	890	2
Ellis St.	Bland St.	East	4"	180	2½
"	"	"	6"	300	3

Cooper St.	Ellis St.	North	1½"	250	2
Union St.	Bland St.	East	6"	620	3
"	Cemetery	"	1½"	870	2
North St.	Bland St.	Roy St.	6"	430	2½
Bland St.	Preston St.	Union St.	6"	310	2½
Elbridge	"	North	1¼"	160	2
Roy St.	Frederick St.	Williams St.	6"	320	2
Williams St.	Roy St.	Bland St.	1"	140	2
"	"	"	1½"	620	2
Roy St.	Frederick St.	Williams St.	1"	80	2
Frederick St.	Roy St.	Penn-Mar St.	6"	550	3
Hudson St.	Spokane St.	Delaware St.	¾"	140	2
Penn-Mar St.	Point St.	Frederick	1"	550	2
View Ave.	Spokane St.	Penn-Mar St.	¾"	275	2
"	Pen-Mar St.	Alley North	1½"	670	2
Spokane St.	View St.	Hudson St.	¾"	370	2
Frederick St.	Penn-Mar St.	Woodland St.	1½"	500	2
"	Woodland	Woodrow St.	½"	400	2
Woodrow St.	Frederick	Alley North	1½"	210	2

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Alley	Woodrow St.	400' West	¾"	400'	2'
*Adams St.	East River Ave.	Jefferson St.	6"	1,830	3
Bruce St.	Indian St.	Douglas St.	1½"	150	2
Indian St.	Douglas St.	Bruce St.	1½"	340	2
Payne St.	"	Preston St.	1½"	370	2

*Water was encountered for the full length of this pipe in such quantities that continual pumping was necessary. No braces were required however.

EXHIBIT No. 61—Continued.

On—	From—	To—	Size pipe.	Length.	Depth.
Preston St.	Payne St.	Bland St.	1¼"	1,365	2
Elbridge St.	Preston St.	North	1¼	90	2
Alley	Kidd St.	"	1½"	160	2
"	"	Ellis St.	1¼"	160	2
Greenbrier St.	Logan St.	Nelson St.	4"	90	2½
"	Nelson St.	Lincoln St.	4"	100	2½
Nelson St.	Greenbrier St.	Norfolk St.	1½"	200	2
Greenbrier St.	York St.	Henry St.	4"	340	2½
Hardy St.	Henry St.	Grant St.	3"	145	2½
Henry St.	Greenbrier St.	Hanover St.	6"	400	3
Sussex St.	Warren Ave.	"	6"	590	3
Warren Ave.	Sussex St.	Orange St.	6"	300	3
Surry St.	Orange St.	Page St.	4"	100	2½
Page St.	Surry St.	Patrick St.	3"	160	22½
Surry St.	Page St.	Hardy St.	4"	320	2½
Hardy St.	Surry St.	Patrick St.	4"	250	2½
"	Patrick St.	Orange St.	4"	140	2½
Orange St.	Warren St.	Halifax St.	6"	720	3
"	Halifax St.	Hardy St.	3"	190	2½
Halifax St.	Orange St.	Turn	6"	100	8
In Lot	R. R. Track	Hardy	4"	60	2½
Hardy St.	West End	Fairfax St.	4"	235	2½
"	Floyd St.	Orange St.	4"	270	2½
Halifax St.	Turn	King St.	6"	350	3
King St.	Halifax St.	Floyd St.	6"	330	3
Floyd St.	King St.	Craig St.	6"	100	3

Craig St.	Floyd St.	Fairfax St.	6"	350	3
Fairfax St.	Craig St.	Roanoke St.	6"	320	3
Roanoke St.	Fairfax St.	Clarke St.	6"	340	3
"	Clarke St.	Bedford St.	6"	450	3½
"	"	"	3"	480	3½
Bedford	Roanoke	Carrol St.	6"	160	3½
"	"	"	3"	170	3½
Carroll St.	Bath St.	Bedford St.	6"	190	3
"	"	"	3"	215	3
Bedford St.	Carrol St.	Mercer St.	6"	200	3
"	"	"	3"	200	3
Mercer St.	Lawson St.	Bedford St.	3"	130	3
"	Bath St.	Carrol St.	4"	330	3
Bedford St.	Mercer St.	Peck St.	3"	210	3
Day St.	Peck St.	Davidson St.	3"	180	3
Peck St.	Day St.	Lawson St.	¾"	170	1½
Lawson St.	Mercer St.	Allen St.	4"	1,145	3
Melcher St.	Lawson St.	North	¾"	180	2
Reese St.	"	Pulaski St.	4"	710	1½
Pulaski St.	Allen St.	Baldwin St.	8"	100	3

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Baldwin	Alley	Powell St.	¾"	100'	2'
Powell St.	Baldwin St.	Park St.	¾"	350	2
"J" St.	"K" St.	Powell St.	¾"	170	2
"K" St.	"J" St.	Lot No. 3	¾"	130	2
Rock St.	Hill St.	Pulaski St.	1½"	630	2
Hill St.	100' E. of Rock St.	Couch St.	1½"	1,930	2
Couch St.	Hill St.	South	1½"	270	2

EXHIBIT No. 61—Continued.

Total.

880	Lineal	feet	of	trench	1½	feet	deep.
18,935	"	"	"	"	2	"	"
3,320	"	"	"	"	2½	"	"
15,540	"	"	"	"	3	"	"
1,260	"	"	"	"	3½	"	"
100	"	"	"	"	8	"	"
40,035	Total	Lineal	feet	of	Shale	Excavation.	

(Here follows Exhibit No. 62, marked page 625.)

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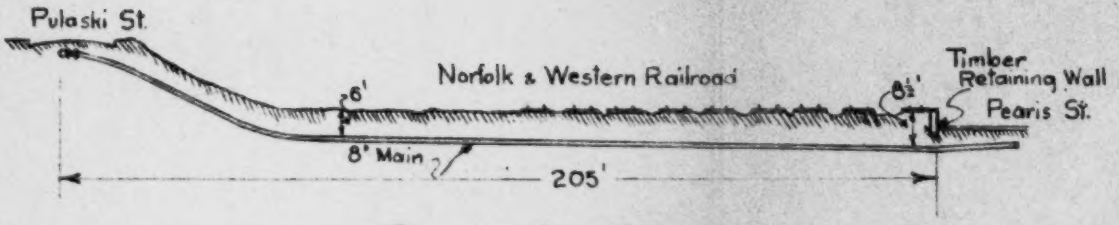
[Illustration omitted.]

EXHIBIT No. 63.

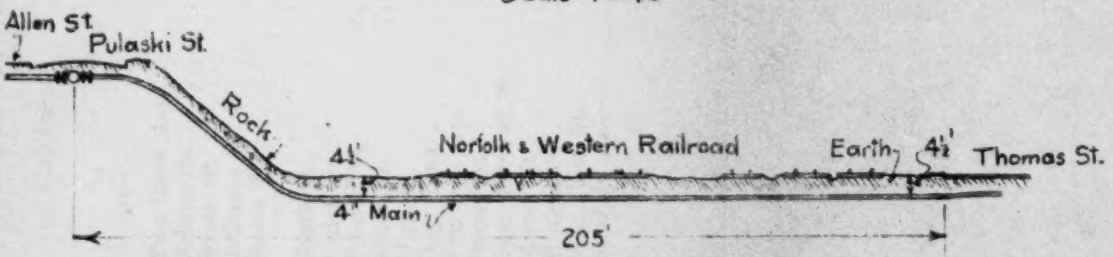
Railroad Crossing at Mercer Street, Showing Retaining Walls.

Exhibit No. 62

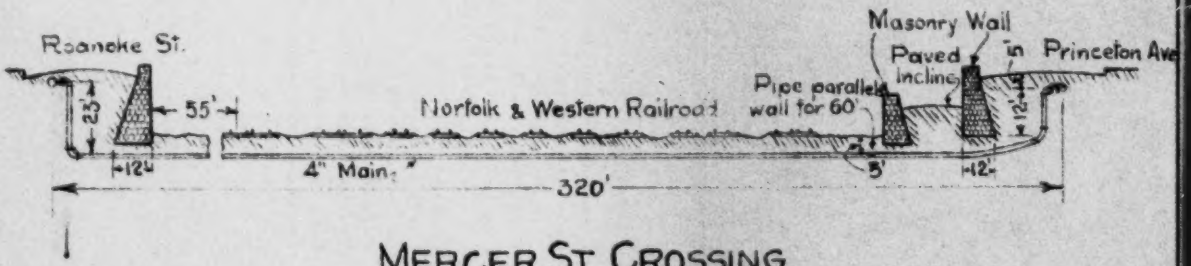
SKETCH SHOWING
STEAM RAILROAD CROSSINGS



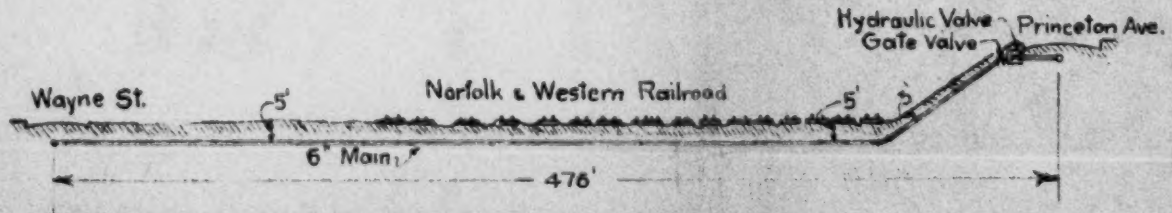
PEARIS ST. CROSSING
Scale 1"= 40'



THOMAS ST. CROSSING
Scale 1"= 40'



MERCER ST. CROSSING
Scale 1"= 50'



LOGAN ST. CROSSING
Scale 1"= 80'

EXHIBIT No. 64.

Itemized List of Street Railway Crossings.

(*a*) Cast Iron.

Right Angle Crossings:

On—	At—	Tracks crossed.
Adams Street	East River Ave.	1
Jefferson St.	Adams St.	1
"	South St.	1
North St.	Jefferson St.	1
Roy St.	North St.	1
Bland St.	"	1
"	South St.	1
"	Union St.	1
"	Preston St.	1
"	Jones St.	1
"	High St.	1
"	Opp. Tank	1
"	Princeton Ave.	1
Princeton Ave.	Russell St.	1
"	Near Tazewell St.	1
"	Mercer St.	1
"	Munroe St.	1
"	Near Giles St.	1
Mercer St.	Bluefield Ave.	1

EXHIBIT No. 64.—Continued.

On—	At—	Tracks crossed.
Bluefield Ave.	Near Mercer St.	1
"	Thomas St.	1
"	Pearis St.	1
"	Poplar St.	1
"	Beech St.	1
Total		24

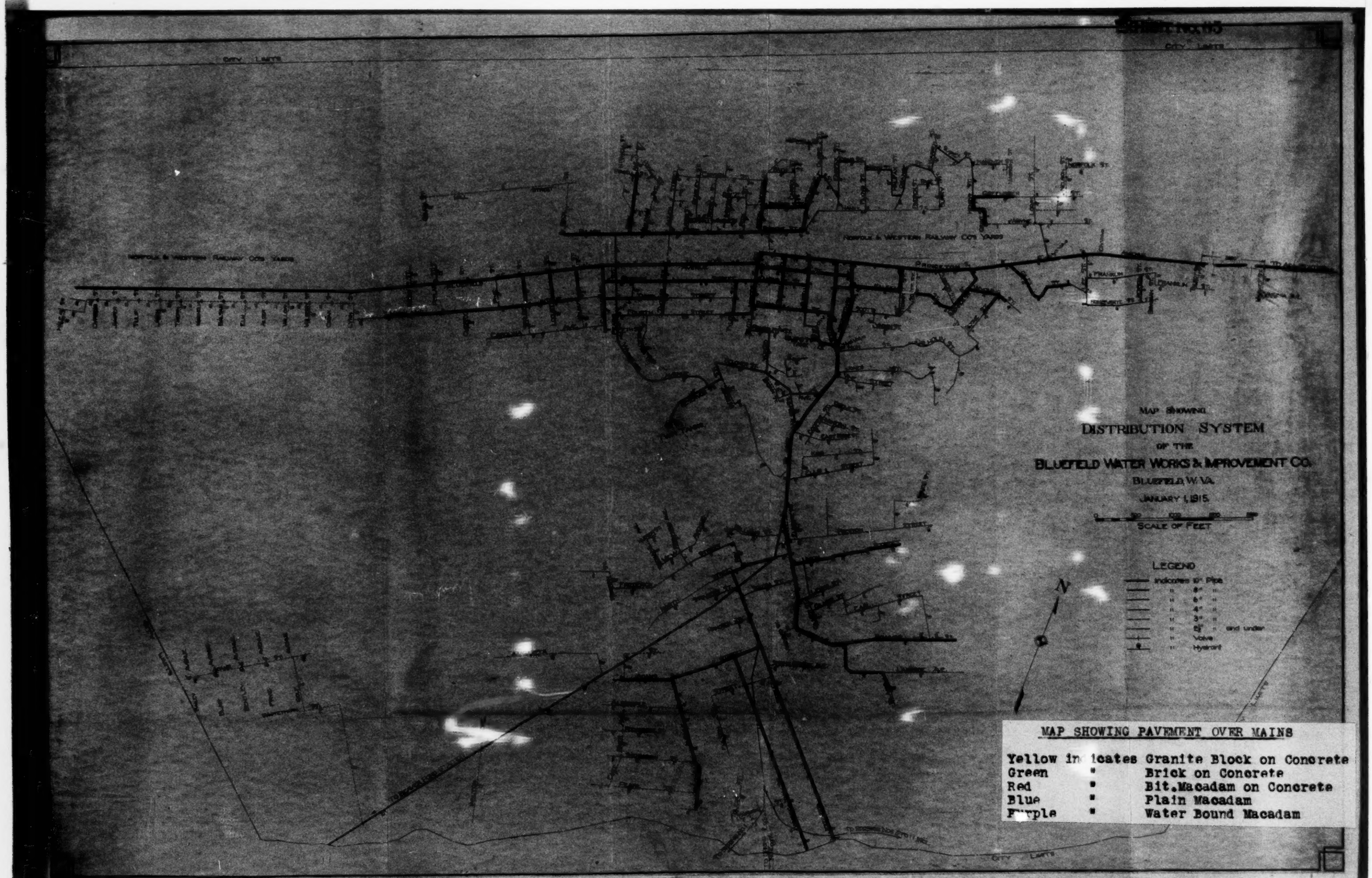
Diagonal Crossings:

On—		Tracks crossed.	Length.
Jefferson St.	Stowers St.	1	9′
North St.	Near Bland St.	1	9
Bland St.	Williams St.	1	18
"	Wilson St.	1	25
Total		4	61′

(*b*) Galvanized Iron.

Right Angle Crossings:

On—	At—	Tracks crossed.
Bland St.	Preston St.	1
"	Vine St.	1


CITY LIMITS
NORFOLK & WESTERN RAILWAY CO'S YARDS
MAP SHOWING
DISTRIBUTION SYSTEM
OF THE
BLUEFIELD WATER WORKS & IMPROVEMENT CO.
BLUEFIELD W. VA.
JANUARY 1, 1915.
SCALE OF FEET
LEGEND
Indicates 10" Pipe
" 8" "
" 6" "
" 4" "
" 3" "
" 2" " and under
" Valve
" Hydrant
N
MAP SHOWING PAVEMENT OVER MAINS
Yellow indicates Granite Block on Concrete
Green " Brick on Concrete
Red " Bit.Macadam on Concrete
Blue " Plain Macadam
Purple " Water Bound Macadam

Bluefield Ave.	Walnut St.	1
"	Locust St.	1
Total		4

Diagonal Crossings:

On—		Tracks crossed.	Length.
Bland St.	Ridge St.	1	14′
"	Wilson St.	1	12
Total		2	26′

(Here follows Exhibit No. 65, marked page 628.)

Itemized List of Mains under Street Paving.

(a) Brick on Concrete.

Cast Iron Mains:

On—	From—	To—	Size.	Length.
Bluefield Ave	W. S. Poplar St	C. Thomas St.	6″	2,970′
"	C. Thomas St.	C. Mercer St.	8	1,160
Poplar St	S. S. Bluefield Ave	N. S. Bluefield Ave.	6	50
Pine St	"	"	4	50
Pearis St	"	"	8	50
Thomas St	N. S. "	Railroad	4	180
"	S. S. "	N. S. Bluefield Ave.	6	50
Bluefield Ave	Center	N. Curb	6	25
Mercer St	S. S. Bluefield Ave	Bridge	4	140
"	"	"	8	110
Princeton Ave	C. Mercer St	C. Bland St.	4	1,005
"	C. Street	N. Curb	4	25
Russell St	C. Princeton Ave	N. S. Princeton Ave.	4	25
Princeton Ave	C. Bland St.	C. Stewart St.	6	830
"	C. Stewart St.	C. Monroe St.	4	870
Monroe St	C. Princeton Ave	N. Curb	3	25
Princeton Ave	C. Monroe St.	260′ E. of Giles Ave	8	750
"	260′ E. of Giles Ave	E. S. Lee St.	10	760
"	C. Princeton Ave	N. S. Curb	6	25
Tazewell St	"	S. S. Princeton Ave.	6	25
Russell St	"	"	6	25
Scott St	"	"	3	25

Summers St.	"	"	3	25	
Monroe St.	"	"	8	25	
Giles St.	"	"	4	25	
Lee St.	"	"	6	25	
Stewart St.	"	S. S. Raleigh St.	6	340	
Raleigh St.	E. S. Stewart St.	C. Higginbotham Ave.	8	635	
Bland St.	C. Princeton Ave.	C. Ramsey St.	6	670	
"	C. Ramsey St.	W. S. at Williams St.	10	2,800	
"	Tank Line	C. Genoa St.	6	710	
"	" "	C. High St. & Bland	6	70	
Higginbotham Av.	C. Princeton Ave.	C. Bland St.	8	1,080	
"	Center	E. Curb	6	25	
Scott St.	C. Higginbotham Ave.	E. S. Higginbotham Av.	3	25	
Bland St.	"	W. S. Bland	10	70	
Jones St.	E. S. Bland St.	W. S. "	4	50	
Genoa St.	C. "	W. S. "	10	25	
Ellis St.	" "	E. S. "	4	25	
Bland St.	S. S. Preston St.	C. Union St.	6	300	
North St.	C. Bland St.	W. S. Bland St.	6	25	
Union St.	"	E. S. "	6	25	
Bland St.	C. South St.	End of Brick	4	180	
South St.	C. Bland St.	W. S. Bland St.	4	25	
Roanoke St.	W. S. Mercer St.	E. S. Roanoke	6	600	
"	Center	S. Curb	4	20	
"	"	"	4	25	
"	"	E. S. Clarke St.	3	780	
"	Bedford St.	"	6	470	
630					
Clarke St.	C. Roanoke St.	W. S. Roanoke	3"	25'	

EXHIBIT No. 66—Continued.

On—	From—	To—	Size.	Length.
Bedford St.	"	E. S. Mercer St.	3	550
"	"	"	6	560
Carrol St.	C. Bedford St.	W. S. Bedford St.	3	20
"	"	"	6	25
Henry St.	C. Greenbrier St.	W. S. Greenbrier St.	6	20
Henry St.	"	C. Hardy St.	3	150
Greenbrier St.	C. Henry St.	E. S. Henry St.	4	20
Hardy St.	C. "	C. Grant St.	3	145
Grant St.	C. Hardy St.	C. Wayne St.	3	180
Wayne St.	C. Grant St.	E. S. Grant St.	3	20
Total				19,965′

Galvanized Iron Mains:

Locust St.	C. Bluefield Ave.	N. S. Bluefield Ave.	1½	25
Walnut St.	C. "	" "	2	25
Jones St.	C. Bland St.	E. S. Bland St.	1¼	25
East Ridge St.	" "	" "	1¼	25
Ridge St.	" "	W. S. "	1½	25
Bland St.	S. S. Preston St.	Williams St.	1¼	360
Preston St.	E. S. Bland St.	W. S. Bland St.	1¼	50
McCullouch St.	C. Russell St.	East	1	200
"	E. S. Mercer St.	"	½	100
Total				835′

(*b*) Granite Block on Concrete.

Cast Iron Mains:

Scott St.	S. S. Princeton Ave.	S. S. Raleigh St.	3	220
"	"	"	6	90
"	Center	W. Curb	6	20
Raleigh St.	E. S. Scott St.	E. S. Stewart St.	8	190
Total				520′

(*c*) Plain Macadam.

Cast Iron Mains:

Bluefield Ave.	W. S. Poplar St.	W. of Beech St.	6	380
Beech St.	C. Bluefield Ave.	N. S. Bluefield Ave.	6	25
Adams St.	C. East River Ave.	C. Jefferson St.	6	1,840
East River Ave.	S. S. Adams St.	W. S. Adams St.	6	40
Wythe Ave.	C. "	S. S. "	6	32
Adams St.	W. of Jefferson St.	Curb	6	23
Jefferson St.	C. Adams St.	C. North St.	6	1,010
Smith St.	C. Jefferson St.	E. S. Jefferson St.	4	20
Beaver Pond Main	W. S. "	"	10	75

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North St.	W. S. Jefferson St.	W. S. Bland St.	6″	785′
Roy St.	C. North St.	" North St.	6	20
Beaver Pond Line	S. S. North St.	"	10	80
Raleigh St.	E. S. Scott St.	C. Monroe St.	8	500

EXHIBIT No. 66—Continued.

On—	From—	To—	Size.	Length.
Monroe St.	Center	C. Princeton Ave.	8	620
Wyoming St.	C. Monroe St.	E. S. Boone St.	4	460
Giles St.	C. Princeton Ave.	Bend near Lee St.	4	1,030
Total				6,940′
Galvanized Iron Mains:				
Bluefield Ave.	W. of Beech St.	W. S. Lynn St.	1	720
Hancock St.	" Jefferson St.	W. S. Jefferson St.	½	20
Stowers St.	"	"	1½	20
Bowyer St.	N. S. Street	S. S. Street	1½	40
Bland St.	At Lakeside Ave		1½	60
Monroe St.	C. Monroe St.	E. S. Street	1¼	65
Total				925′
(*d*) Bitulithic Macadam on Concrete.				
Highland Ave.	E. S. Maple St.	E. S. Walnut St.	4	2,485
Pine St.	C. Highland Ave.	N. S. Highland Ave.	4	25
Spruce St.	S. S. "	"	4	50
Highland Ave.	C. Chestnut St.	West	4	70
Chestnut St.	C. Rogers St.	C. Carolina Ave.	4	560
Rogers St.	C. Chestnut St.	C. Pearis St.	4	180
"	C. Pearis St.	C. Mercer St.	6	1,790

Third St	C. Chestnut St	E. S. Thomas St	4	780	
Fourth St	W. S. Tyler St	C. Tyler St	4	25	
"	C. "	C. Mercer	6	240	
Pearis St	W. S. Rogers St	S. S. Rogers St	8	50	
"	N. S. Third St	S. S. Third St	8	50	
Thomas St	S. S. Bluefield Ave	C. Rogers St	4	180	
"	C. Rogers St	N. S. Fourth St	6	400	
Tyler St	"	C. Fourth St	6	415	
Mercer St	S. S. Bluefield Ave	C. Duhring St	8	170	
"	C. Duhring St	C. Fourth St	6	425	
"	C. Fourth St	S. S. "	8	25	
Duhring St	C. Mercer St	C. Russell St	8	675	
Ramsey St	"	"	6	690	
"	C. Russell St	C. Bland St	8	350	
Tazewell St	S. S. Bluefield Ave	C. Duhring St	6	315	
"	C. Duhring St	C. Ramsey St	3	340	
Russell St	S. S. Bluefield Ave	C. Duhring St	6	300	
"	C. Duhring St	S. S. Ramsey St	8	350	
Boone St	W. S. Wyoming St	West	4	300	
Greenbrier St	E. S. Henry St	W. S. York St	4	540	
Mercer St	N. S. Roanoke St	C. Bedford St	6	280	
"	C. Bedford St	S. S. Lawson St	3	350	
Bedford St	C. Mercer St	E. S. Mercer St	3	20	
"	"	"	6	20	
"	"	W. S. "	3	20	

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Park Ave	N. S. Pulaski St	Alley	4"	290'	

EXHIBIT No. 66—Continued.

On—	From—	To—	Size.	Length.
Park Ave	Alley	S. S. Powell St	6	450
Union St	E. S. Bland St	E. S. Cemetery	6	555
Forrest St	E. S. Union St	W. S. Union St	6	45
Spring Main	E. S. Jefferson St	W. S. Jefferson St	6	45
"	" Washington St	" Washington Ave	6	180
"	"	"	6	100
Albemarle St	W. Curb Wythe Ave	E. S. Wythe Ave	6	30
"	"	W. S. "	6	10
Wythe Ave	S. S. Albemarle St	N. S. Albermarle St	6	40
Total				14,215'
Galvanized Iron Mains:				
Cherry St	C. Highland Ave	S. S. Highland Ave	¾	25
Locust St	"	"	1½	25
Walnut St	"	North	½	150
Chestnut St	C. Carolina Ave	S. S. Carolina Ave	½	25
Alley	C. Rogers St	S. S. Rogers St	1½	25
"	C. Third St	N. S. Third St	1½	25
Tyler St	C. Fourth St	S. S. Fourth St	½	25
McCullouch St	C. Tazewell St	West	1¼	140
"	C. Russell St	E. S. Russell St	1	25
Alley	C. Park Ave	W. S. Park Ave	¾	25
Albemarle St	E. Curb Jefferson	W. S. Jefferson St	1¼	30

Spring Grove Ave.	" "	E. S. "	1¼	10
Albemarle St.	E. S. Washington St.	W. S. Washington St.	1½	40
Fairmont St.	W. S. Washington St.	E. Curb "	1¼	30
Shenandoah St.	W. Curb Wythe Ave.	W. S. Wythe Ave.	2	10
Pearl St.	"	"	2	10
Alley	"	"	1¼	10
Wythe Ave.	S. S. Rockbridge St.	N. S. Rockbridge St.	1½	40
"	S. S. Shenondoah St.	C. Shenandoah St.	2	20
"	N. S. "	"	1¼	20
Total				710′

(*e*) Water Bound Macadam.

Cast Iron Mains:

Pulaski St.	W. S. Mercer St.	C. Allen St.	6	1,145
"	C. Allen St.	C. Pearis St.	8	680
"	C. Pearis St.	W. S. Rock St.	4	680
Peck St.	C. Pulaski St.	N. S. Pulaski St.	3	10
"	" "	S. S. "	6	20
Barger St.	" "	N. S. "	4	10
Reese St.	" "	" "	4	10
Burton St.	" "	" "	4	10

633

Allen St.	C. Pulaski St.	N. S. Pulaski St.	6″	15′
"	" "	S. S. "	4	15
Baldwin Ave.	" "	N. S. "	4	15

EXHIBIT No. 66—Continued.

On—	From—	To—	Size.	Length.
Park Ave	" "	" "	4	15
Pearis St	" "	S. S. "	8	15
Princeton Ave	E. S. Lee St	S. S. Princeton Ave	10	180
"	S. S. Street	N. S. Street	10	800
Lewis St	E. S. Bland St	W. Curb Bland St	6	30
Bland St	N. S. Lewis St	S. S. Lewis St	4	40
"	N. S. Adams St	S. S. Adams St	6	40
Total				3,730′

Galvanized Iron Mains:

Rock St	C. Pulaski St	N. S. Pulaski St	1½	15
Adams St	West Curb Bland St	W. S. Bland St	1¼	10
Total				25′

(*f*) Mains in Parkings.

Cast Iron Mains:

Bland St	S. S. Preston St	C. Union St	6	310
"	C. Lewis St	W. S. at Bowyer St	6	1,040
Wythe Ave	S. S. Adams St	S. S. Albermarles St	6	430
Total				1,780′

Galvanized Iron Mains:

Bland St.	N. S. Preston St.	S. S. Williams St.	1¼	330
Union St.	Cemetery	East	1½	830
Bland St.	Bowyer St.	South	1½	1,210
Bowyer St.	Bland St.	Oakhurst Cir.	1½	1,570
Jefferson St.	C. Spring Grove Ave.	N. S. Bay St.	1¼	500
Wythe Ave.	S. S. Albemarle St.	S. S. Rockbridge St.	1½	360
"	S. S. Rockbridge St.	C. Shenandoah St.	1¼	370
Washington St.	At Turnpike		1¼	610
Total				5,780′

Itemized List of Valves on Mains, Showing Location and Size.

On—	At—	Size.	Number valves.	Number boxes.
North St.	Beaver Pond Line	10″	1	1
Higginbotham Ave	Bland St.	10	1	1
Bland St.	Ramsey St.	10	1	1
"	Genoa St.	10	3	3
Total		..	6	6
Higginbotham Ave	Bland St.	8″	1	1
Pearis St.	Pulaski St.	8	1	1
Pulaski St.	Baldwin Ave.	8	1	1
"	Allen St.	8	1	1
Bluefield Ave.	Pearis	8	1	1
Pearis St.	Bluefield Ave.	8	2	2
"	Rogers St.	8	2	2
"	Fourth St.	8	1	1
Bluefield Ave.	Mercer St.	8	2	2
Princeton Ave.	Monroe St.	8	1	1
Mercer St.	Fourth St.	8	1	1
Duhring St.	Tazewell St.	8	1	1
Russell St.	Duhring St.	8	1	1
Russell St.	Ramsey St.	8	2	2
Bland St. Line	Alley	8	Check V.	..
Ramsey St.	Bland St.	8	1	1

Genoa St.	Belcher St.	8	1	1
Higginbotham Ave.	Princeton Ave.	8	1	1
"	Raleigh St.	8	1	1
Raleigh St.	Higginbotham Ave.	8	1	1
Total G. V.			23	23
" C. V.			1	..
Scott St.	Raleigh St.	6"	1	1
"	Near "	6	1	1
Stewart St.	"	6	1	1
R. R. Crossing	Near Giles	6	1	1
Franklin St.	Lee St.	6	1	1
Ronceverte St.	"	6	1	1
Jackson St.	Ronceverte St.	6	1	1
Higginbotham Ave.	Near Raleigh St.	6	1	1
Princeton Ave.	Stewart St.	6	1	1
Stewart St.	Princeton Ave.	6	1	1
Halifax St.	Orange St.	6	1	1
Tazewell St.	Princeton St.	6	1	1
Russell St.	"	6	1	1
Bland St.	"	6	1	1
Princeton Ave.	Bland St.	6	1	1
Princeton Ave.	Higginbotham Ave.	6	2	2
Roanoke St.	Pulaski St.	6	2	2
"	Clarke St.	6	1	..
635				
Stewart St.	Scott St.	6"	1	1
Higginbotham Ave.	Bland St.	6	2	2

EXHIBIT No. 67—Continued.

On—	At—	Size.	Number valves.	Number boxes.
Bland St.	Genoa St.	6	1	1
Bluefield Ave.	W. of Walnut St.	6	1	1
Allen St.	Pulaski St.	6	1	1
Pulaski St.	Allen St.	6	1	1
Thomas St.	Bluefield Ave.	6	1	1
Rogers St.	Pearis St.	6	1	1
"	Thomas St.	6	2	2
Fourth St.	Pearis St.	6	1	1
"	Thomas St.	6	1	1
Thomas St.	Fourth St.	6	1	1
Bluefield Ave.	W. of Mercer St.	6	1	1
Princeton Ave.	Lee St.	6	1	..
Lee St.	Princeton Ave.	6	1	1
Princeton Ave.	E. of Lee St.	6	1 Check V.	..
Talbot St.	Princeton Ave.	6	1	1
Franklin St.	Jackson St.	6	1	1
Floyd St.	King St.	6	1	1
Henry St.	Greenbrier St.	6	1	1
Orange St.	Surry St.	6	1	1
Wayne St.	Logan St.	6	1	..
Bedford St.	Mercer St.	6	1	1
"	Carroll St.	6	2	2
Pulaski St.	Mercer St.	6	1	1
"	Peck St.	6	1	1
Fairfax St.	Roanoke St.	6	1	1
Rogers St.	Tyler St.	6	1	1

Tyler St.	Rogers St.	6	1	1
Rogers St.	Mercer St.	6	1	1
Mercer St.	Rogers St.	6	1	1
Fourth St.	Tyler St.	6	1	1
Tyler St.	Fourth St.	6	1	1
Ramsey St.	Mercer St.	6	1	1
Mercer St.	Fourth St.	6	1	1
Tazewell St.	Duhring St.	6	1	1
Ramsey St.	Tazewell St.	6	1	1
"	Russell St.	6	1	1
Bland St.	Ramsey St.	6	1	1
Bluefield Ave.	Poplar St.	6	1	1
Poplar St.	Bluefield Ave.	6	1	1
Beech St.	"	6	1	1
Adams St.	East River Ave.	6	1	1
East River Ave.	Adams St.	6	2	2
Wythe Ave.	"	6	1	1
Albemarle St.	Wythe Ave.	6	2	2
Adams St.	Near Jefferson St.	6	2	2
North St.	Roy St.	6	1	1
Roy St.	North St.	6	1	1
Jefferson St.	"	6	1	1
"	Stower St.	6	2	2
Bland St.	"	6	1	1
North St.	Bland St.	6	1	1
"	Beaver Pond Line	6	2	2
Lewis St.	Bland St.	6	1	1
Total G. V.			82	79
" C. V.			1	..

On—	At—	Size.	Number valves.	Number boxes.
Hardy St.	R. R.	4"	1	1
Roanoke St.	Pulaski St.	4	3	2
Princeton Ave.	Bland St.	4	1	1
"	Russell St.	4	1	1
Russell St.	Princeton Ave.	4	1	1
Princeton Ave.	Tazewell St.	4	2	2
"	Stewart St.	4	1	1
Giles St.	Lee St.	4	1	1
Lawson St.	Allen St.	4	1	1
"	Reese St.	4	1	1
Reese St.	Pulaski St.	4	1	1
Higginbotham Ave.	Bland St.	4	2	2
Jones St.	"	4	2	2
Pulaski St.	Rock St.	4	1	1
Park St.	Pulaski St.	4	1	1
Baldwin Ave.	"	4	1	1
Allen St.	"	4	1	1
Burton St.	"	4	1	1
Thomas St.	Bluefield Ave.	4	1	1
Rogers St.	Pearis St.	4	1	1
Thomas St.	Rogers St.	4	1	1
Chestnut St.	Third St.	4	2	2
Third St.	Pearis St.	4	2	2
"	Thomas St.	4	1	1
Bluefield Ave.	W. of Mercer St.	4	1	..
Greenbrier St.	Lincoln St.	4	1	1
"	Henry St.			

Orange St.	Surry St.	4	1	1
Wayne St.	Logan St.	4	2	2
Logan St.	Wayne St.	4	1	1
Bath St.	E. of Carroll St.	4	1	1
Mercer St.	Bath St.	4	1	1
Lawson St.	Mercer St.	4	1	1
Bedford St.	"	4	1	1
Mercer St.	Bedford St.	4	1	1
"	Pulaski St.	4	1	1
R. R. Crossing	Roanoke St.	4	1	1
Barger St.	Pulaski St.	4	1	1
Princeton Ave.	Monroe St.	4	1	1
Giles St.	Princeton Ave.	4	1	1
Wyoming St.	Monroe St.	4	1	1
Boone St.	Wyoming St.	4	1	1
Mercer St.	Bluefield Ave.	4	1	1
Third St.	Tyler St.	4	1	1
Tazewell St.	Ramsey St.	4	1	1
Highland Ave.	Maple St.	4	1	1
Maple St.	Highland Ave.	4	1	1
Highland Ave.	Pine St.	4	1	1
Pine St.	Highland Ave.	4	1	1
Ellis St.	Bland St.	4	1	1
South St.	Jefferson St.	4	1	1
Alley	Union St.	4	1	1
"	Lewis St.	4	1	1
Lewis St.	Bland St.	4	1	1
Earl St.	Earl St.	4	1	1
Total			63	61

EXHIBIT No. 67—Continued.

On—	At—	Size.	Number valves.	Number boxes.
Fairfax St.	Hardy St.	3″	1	1
Floyd St.	"	3	2	1
Roanoke St.	Clarke St.	3	1	1
Clarke St.	Roanoke St.	3	1	1
Roanoke St.	Pulaski St.	3	1	1
Orange St.	Hardy St.	3	1	1
Summers St.	Princeton St.	3	1	1
Scott St.	"	3	1	1
"	W. of Stewart St.	3	1	1
"	Stewart St.	3	1	1
Henry St.	Greenbrier St.	3	1	1
Mercer St.	Lawson St.	3	1	1
Bedford St.	Peck St.	3	1	1
Davidson St.	Day St.	3	1	1
Monroe St.	Princeton St.	3	1	1
Tazewell St.	Duhring St.	3	1	1
Carolina St.	Spruce St.	3	1	1
Floyd St.	King St.	3	1	1
Hanover St.	Henry St.	3	1	1
Total			20	19

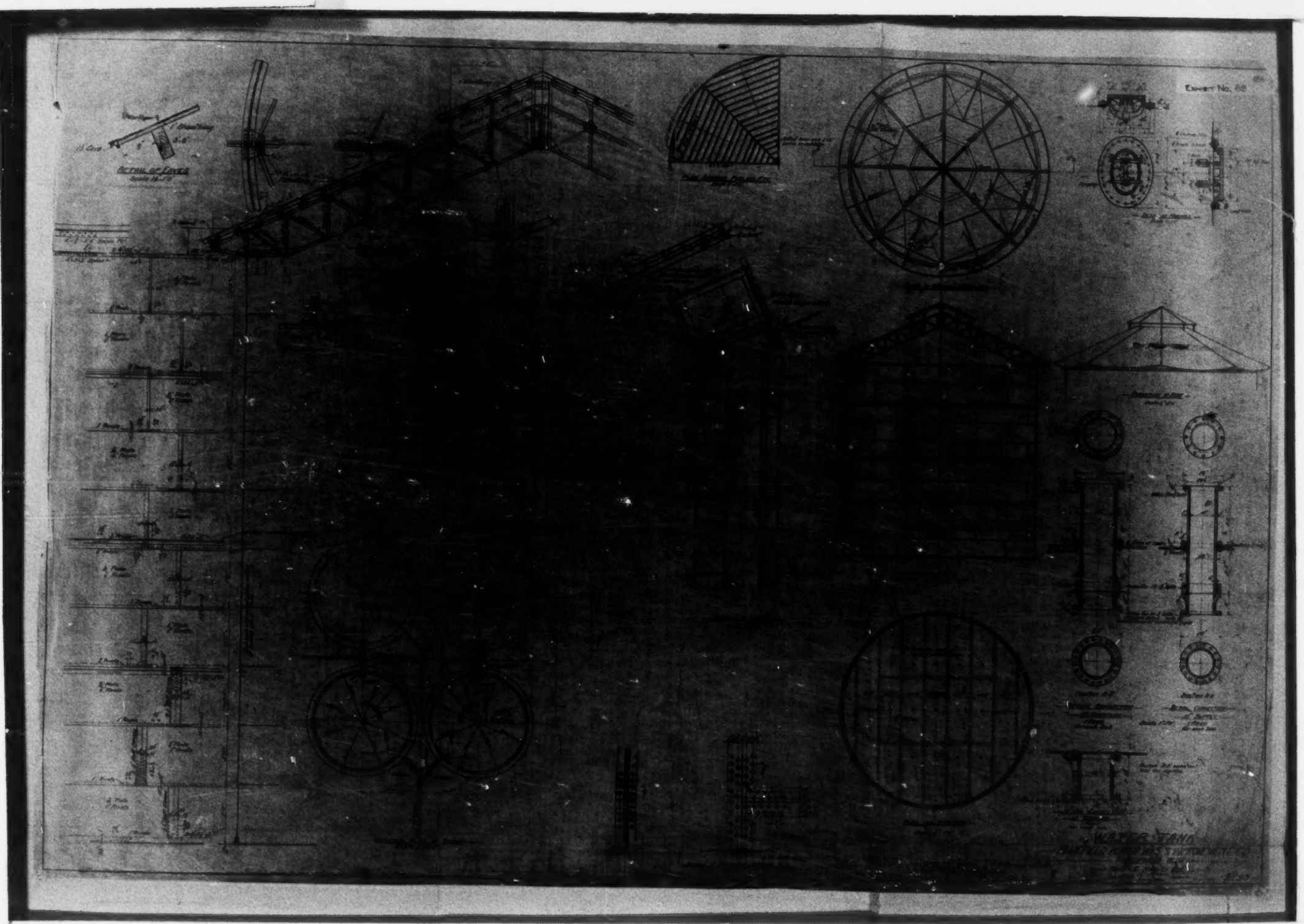


Exhibit No. 68
WATER TANK

638 EXHIBIT No. 68.

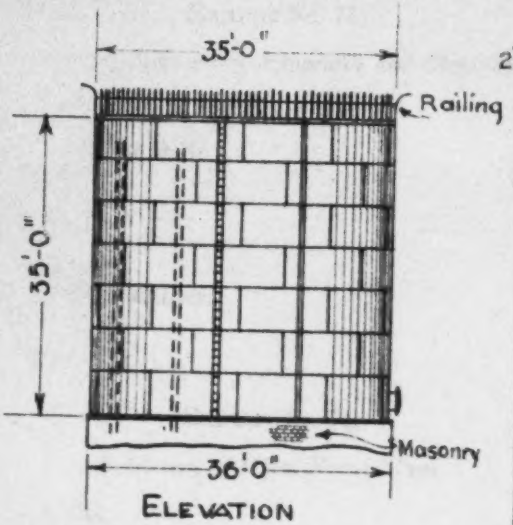
Itemized List of Hydrants, January 1, 1915.

Size.	Kind.	No. in use.
4"	Eddy	15
4"	"	7
4"	"	3
4"	"	8
4"	"	10
4"	"	6
4"	"	2
4"	Corey	6
4"	"	2
4"	"	4
6"	"	1
6"	"	9
8"	"	45
		118

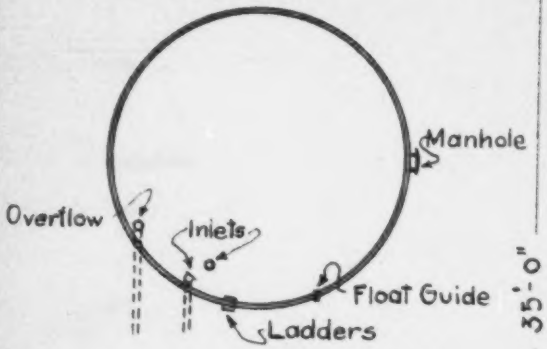
(Here follows Exhibit No. 69, marked page 639.)

DETAIL OF BLAND STREET STANDPIPE

Exhibit No. 72



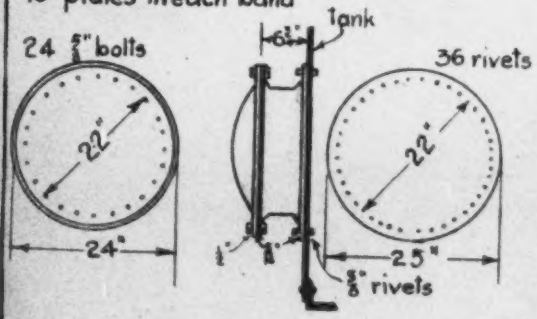
ELEVATION



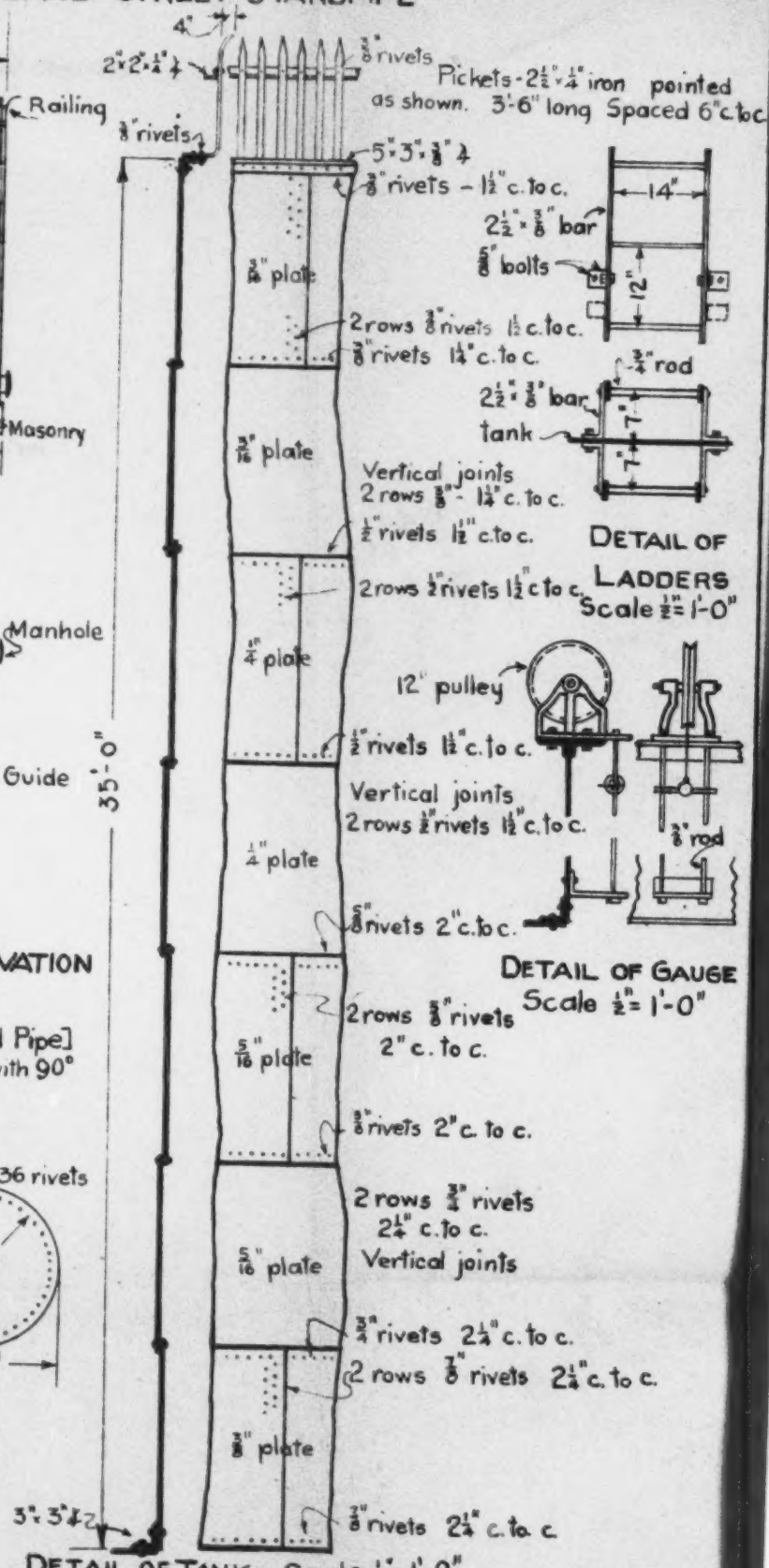
SECTIONAL PLAN

GENERAL PLAN & ELEVATION
Scale 1" = 20'

10" C.I. Overflow 1' from top [Flanged Pipe]
6" C.I. Inlet in tank 3' from top H.&S. with 90° bend at top.
10 plates in each band



DETAIL OF MANHOLE
Scale ½" = 1'-0"



DETAIL OF LADDERS
Scale ½" = 1'-0"

DETAIL OF GAUGE
Scale ½" = 1'-0"

DETAIL OF TANK Scale ¼" = 1'-0"

1943

642 EXHIBIT No. 73.

Inventory Laboratory Apparatus and Chemicals.

Equipment:

1 Double Wall Dry Bath.
2 Bake Ovens.
1 Copper Tray.
1 Incubator.
1 Hot Plate.
1 Food Chopper.
1 Arnold Steam Sterilizer.
Balance.
Apparatus.
Chemicals.

643 EXHIBIT No. 74.

Inventory of Office Furnishings.

1 Flat Top Desk.
1 " " "
1 " " "
1 Roll Top Desk.
1 " " "
1 " " "
2 Desk Trays.
1 Monarch Typewriter.
1 " "
1 Typewriter Chair.
1 Table.
1 "
1 "
1 Filing Cabinet.
1 " Case.
1 " "
5 Office Chairs.
4 Chairs.
1 Revolving Chair.
1 Oil Stove.
1 Card Index.
1 Book Case.
1 Adding Machine.
1 Eyelet Machine.
2 Letter Presses.
1 Letter Press Stand.
1 Letter Book Back.
2 Customers.
2 Granite Cuspidors.

EXHIBIT No. 74.—*Continued.*

3 Sponge Cups.
1 Stamp Rack.
1 Arm Rest.
2 Rulers.
1 Letter Opener.
5 Sand Busch Wells.
3 Stamp Pads.
1 Iron Safe.
1 " "
1 " "
3 Baskets.
3 "
3 Daters.
1 Postal Scale.
1 Letter Box.
2 Wall Map Racks.
1 Map Rack.
1 Office Door Mat.
9 " Window Shades.
9 Metal Window Screens.
1 Screen ~~Door &~~ Transom.
644 2 Awnings, complete.
1 Double Well Base.
1 Cut Pin Cup.
1 Finger Moistener.
1 Receipting Stamp.
1 City Directory.
1 Dictionary.

Surveying Instruments:

1 Transit.
1 " & Tripod.
1 Level & Tripod.
2 Sight Rods.
1 Extra Tripod.
1 Drawing Board and Stand.

645 EXHIBIT No. 75.

Inventory of Material & Supplies at Ada Pumping Station.

210 lin. ft. 10" C. I. pipe.
Total wt. of above pipe 12,600 lbs.

1 10" C. I. gate valve.
2 1½" brass unions, flanged.
1 2" " " "
1 3" " " "

EXHIBIT No. 75.—*Continued.*

2 2½" Couplings.
4 2" "
2 3" unions, flanged.
2 2" " "
4 1½" " "
8 1¼" " "
1 4" plugs.
11 2" "
2 4" ells.
10 2" "
10 1½" "
8 1¼" "
6 2" 45° Bends.
8 1½" 45° "
12 1" 45° "
7 ¾" 45° "
5 ½" 45° "
3 3" to 2½" Bushings.
2 3" to 2" "
2 2½" to 2" "
20 2" to ¾" "
7 1½" to ½" "
1 3 x 3 x 1¼" tees.
8 3" "
2 2" "
4 1" "

Miscellaneous:

13 3" Boiler Flues.
17 ft. 4" Wrought Iron pipe.
7 ½" Turn Buckles.
80 2½" Frame Pulleys.
528 large concrete blocks (8 x 10 x 24).
92 small " " (8 x 10 x 12).
5,000 tile shingles (6½ x 13 x 2).
100 Tons Coal.

646 Miscellaneous Valves:

1 3" Interchangeable Globe.
8 1½" " "
2 1" " "
13 ¾" " "
3 1½" Gate Valves.

Tools & Equipment:

1 Automatic Flue Cleaner.
1 3 ton chain Hoists.

EXHIBIT No. 75.—*Continued.*

2 Gasoline Torches.
1 Set 1¼" Block & Tackle.
1 #30 Ft. Extension Ladder.
1 Pipe Vise.
1 Portable Forge.
100 ft. 2" Line Hose.
1 60 lb. Anvil.
4 Iron Bed Wheelbarrows.
1 Bench Vise.
1 Bung Borer.
1 18 ft. ¾" Log Chain.
1 20 ft. ⅜" " "
1 Bellows.
5 Screw Jacks.
1 Flue Roller.
1 Pair Pipe Tongs.
1 Flue Cleaner.
1 60 Gal. Oil Tank.
1 50 " " "
1 5 " " "
50 ft. ½ Bluestone Water Hose.
1 14" S. Wrench.
1 5/16 Square Shank Drill.
2 9/16 " " "
1 ⅝" Taper Tap.
2 3½" Open Wrenches.
1 3" " "
1 4" " "
1 4½" " "
6 Socket Wrenches.
5 Side Socket Wrenches.
1 24" Stilson "
1 18" " "
1 2½" x 2¼" Open Wrench.
1 1⅝ x 1½" " "
1 1⅜ x 1¼" " "
1 1⅛ x 1" " "
1 ⅞ x ¾" " "
1 ⅜ x 9/16" " "
1 ⅜ x 5/16" " "

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2 10" Monkey Wrenches.
2 12" " "
2 6" " "
1 Valve Seat Socket Wrench.
7 Valve Wrenches.
1 Iron Stop Box Wrench.
2 Valve Seat Wrenches.

EXHIBIT No. 75.—*Continued.*

5 Cut Off Wrenches.
1 Socket Wrench for 5/8" Nut.
1 " " " 1/2" "
1 lb. Machinist Hammer.
3 Tallow Caps.
1 5 Gal. Oil Can.
1 2 " " "
1 1/2 Pint Oiler.
1 10 lb. Copper Matter.
1 Blow-off Valve Wrench.
2 Lash Bars.
2 Scrappers.
2 Fire Hooks.
2 Brass Pyrene Fire Extinguishers.
1 Lawn Morwer.

At Shop.

10 1" Corporation Stops, Flanged.
46 3/4" " " "
10 1/2" " " "
4 1" " " Plain.
9 3/4" " " "
13 1/2" " " "
18 3/4" Curb Stops, Plain.
19 1/2" " " "
24 1/2" " " Flanged.
12 1/2" brass unions.
13 1/2" " " , lead flanged.
5 1" brass plugs.
12 3/4" " "
43 1/2" " "
3 2" unions.
8 1 1/2" "
6 1 1/4" "
10 3/4" "
10 1/2" "

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7 2" tees.
13 1 1/2" "
11 1 1/4" "
10 1" "
14 3/4" "
94 1/2" "
13 2" Ells, plain.
11 1 1/2" " "
14 1 1/4" " "
33 1" " "

EXHIBIT No. 75.—*Continued.*

62 ¾" " "
42 ½" " "
8 1" Ells, Street.
11 ¾" " "
31 ½" " "
56 1½" Couplings.
96 1¼" "
26 1" "
26 ¾" "
15 ½" "
10 1½" Plugs.
5 1¼" "
10 1" "
7 ¾" "
6 ½" "
12 1" to ½" bushings.
8 ¾" to ½" "
5 2" Service Clamps.
8 1½" " "
17 1¼" " "

Miscellaneous:

40 ¾" Goose Neck Couplings.
39 ¾" Soldering Nipples.

Tools & Equipment:

3 Chisel Bars.
2 Pair Calipers.
1 " 8" Compas-es.
2 Lanterns.
2 10" Screw Drivers.
2 12" " "
2 Pipe Vises.

649

1 Buffalo Down Draft Elec. Forge.
1 97 lb. Anvil, Smith Tools, Etc.
1 #3 Tapping Machine.
2 ½" D. R. & T. Mueller Threads.
1 1 Ton Weston Chain Hoist.
1 #1 New Style Smiths Tapping Machine.
9 Steel Figure Sets.
1 Bronz- Test Nozzle.
50 Ft. 4 Ply Water Hose.
1 Set Little Grant Screw Plates.
2 Toledo Stocks & Dies.

EXHIBIT No. 75.—*Continued.*

2 Millers Adjustable Die Stocks.
2 Pair Chain Tongs.
2 Lead Laddles.
1 Set Painters Hooks.
2 16 lb. Sledges.
4 Iron Bed Wheelbarrows.
4 Pinch Bars.
2 Bench Vises.
3 Steel Squares.
1 Lufkin Lumber Rule.
1 Pair Ellis Pipe Cutters.
1 Force Pump.
1 Lead Furnace & Kettle.
1 " "
1 Jointing Plane.
2 Soldering Rims.
2 Plastering Trowels.
2 Tapping Machines.
2 Pair Ratchet Dies.
1 Deeming Pump.
3 Scythes & Snaths.
3 Hatchets.
1 Coke Fork.
1 50 ft. Tape Line.
1 Drawing knife.
1 Inspectors Gauge.
1 Piezometer.
2 Handled Axes.
1 5 ft. wide Cross Cut Saw.
1 6 " " " " "
25 S. H. Shovels.
1 L. H. "
25 Pick & Handles.
1 #2 Lauds Droughan Pump.
1½ 1½" Solid Center Brace Bit.
1 Standley Butt Gauge.
1 7/16 Arrow Brace Bit.
650 1 ⅜ Brace Bit.
1 Marking Gauge.
1 6" Zigzag Rule.
1 Brass Plumb Bob.
1 #2 Barnes Pipe Cutter.
3 24" Stilson Wrenches.
2 18" " "
3 14" " "
4 10" " "
1 8" " "
2 6" " "

EXHIBIT No. 75.—*Continued.*

2 1" Drills for Tapping Machine.
2 ¾" " " " "
3 ½" " " " "
3 Ratchet Drill Stocks.
1 1¼" Twist Drill Bit.
1 1" " " "
3 ⅞" " " "
2 11/16" " " "
2 ⅝" " " "
3 13/16" " " "
1 Brace Bit.
3 Cutting Hammers.
6 8 lb. Stricking Hammers.
4 Caulking Hammers.
1 Yarning Chisel.
4 Hand Saws.
1 Rip Saws.
1 #146 B. S. Drill.
1 #1 Sanders Pipe Cutter.
1 #2 " " "
40 Ft. 1¼" Steel.
1 Meter Testing Machine.
1 ⅛" Pipe Tap.
1 ¼" " "
1 ⅜" " "
1 ½" " "
1 ¾" " "
1 1" " "
1 1¼" " "
1 1½" Pipe Tap.
1 2" " "
1 60 lbs. Bench Vise.
2 Telephone Spoons.
15 Ft. 2" Suction Hose.
2 Brass Pyrene Fire Extinguishers.
1 Pair 8" Pliers.
1 Mitre Box Saw.
1 Combination Plane.
651 1 Smoothing Plane.
1 Jack Plane.
1 Fore Plane.
1 Jointing Plane.
1 Oil Stove.
1 Buffalo Fire Extinguisher.
1 Grind Stone.
1 Set Green River Screw Plates.

EXHIBIT No. 75.—*Continued.*

Meters in Stock:

1 4" Gem.
1 2" Gem.
24 5/8" Empire.
4 5/8" Keystone.
20 5/8" Niagara.
1 5/8" Gamon.
2 1" Neptune.
1 1" Keystone.
1 1" Nash.
3 5/8" Neptune.
1 2" Neptune.
1 1½" Neptune.
1 1" Lambert.

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At Pipe Yard.

231 lin. ft. 10" C. I. pipe.
806 " " 8" " "
956 " " 6" " "
200 " " 4" " "
600 " " 3" " "

Total wt. of above pipe 96,878 lbs.

Cast Iron Specials:

3 6" "Y" branches.
9 4" " "
4 3" " "
3 10" Ells.
1 8" "
9 6" "
12 4" "
13 3" "
1 10" 45° Bends.
1 8" " "
4 6" " "
7 4" " "
9 3" " "

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3 10" sleeves.
12 8" "
4 6" "
27 4" "
30 3" "

EXHIBIT No. 75.—*Continued.*

1 10" tees.
2 6" "
16 4" "
13 3" "
3 10 x 10 x 6" tees.
4 10" to 8" reducers.
2 8" to 6" "
6 6" to 4" "
1 6" to 8" increasers.
7 3" to 4" "
2 10 x 10 x 6 x 6" crosses.
6 10 x 10 x 6 x 6" "
1 8 x 8 x 8 x 8" "
3 4 x 4 x 4 x 4" "
4 10" Caps.
1 6" "
4 4" "
6 3" "
1 10 x 10 x 8" split sleeves.
1 6 x 6x 4" " "
1 8" " "
3 6" " "

Wt. of above Specials 119,763 lbs.

1 8" Machine Valve.
1 6" " "
1 4" " "
1 10" C. I. Gate Valves.
2 10" " " "
1 8" " " "
14 6" " " "
2 4" " " "
2 3" " " "

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9 8" C. I. Pat. Plugs.
13 6" " " "
8 4" " " "
1 6" fire hydrant.

Miscellaneous:

103 Sec. 18" vit. tile pipe.
252 Ft. ½" Galv. pipe.
6,800 Paving Brick.
20 Tons Coal.
Lin. Ft. Iron Fence.

EXHIBIT No. 75.—*Continued.*

Tools & Equipment:

1 Extension Tool.
1 Road Plow.
1 Drag Scraper.

Lumber:

68 pcs. 2 x 8 x 12.
26 " 2 x 8 x 14.
3 " 2 x 12 x 12.
8 " 2 x 10 x 14.
90 " 2 x 6 x 12.
50 " 2 x 4 x 16.
80 " 2 x 4 x 14.
100 " 2 x 4 x 12.
50 " 4 x 5 x 7.
1,760 bd. ft. Hickory Boards.
2,280 " Walnut "
426 " Oak "
10,800 " 1" Boards.

653*a* *Report upon the Value of the Water Works Properties of the Bluefield Water Works & Improvement Company Bluefield, W. Va., January 1st 1915.*

John W. Alvord,

Chicago.

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653*d* *Report.*

654 Mr. William McCarthy, Supt.,
Bluefield Water Works & Improvement Company,
Bluefield, W. Va.

DEAR SIR:

I would respectfully report that at your request I have made a valuation of the properties of the Bluefield Water Works & Improvement Company, and present herewith my detailed report on same. My estimate is based upon:

First. Complete inventory of the property of the Bluefield Water Works & Improvement Company as of date January 1st, 1915, prepared under my direction by Mr. A. T. Luce of my office.

Second. Personal examination of the property, the community served, and the conditions under which the property is being operated.

Third. The study of the operating statistics, local prices and unusual conditions affecting the value of the property.

I have estimated the cost of reproduction of the property less depreciation, based upon the present rate of return, to be $540,259. After a careful study of the plant and surrounding conditions,
655 I have come to the conclusion that the existing plant is worth not less today than it would cost to rebuild, less its depreciation.

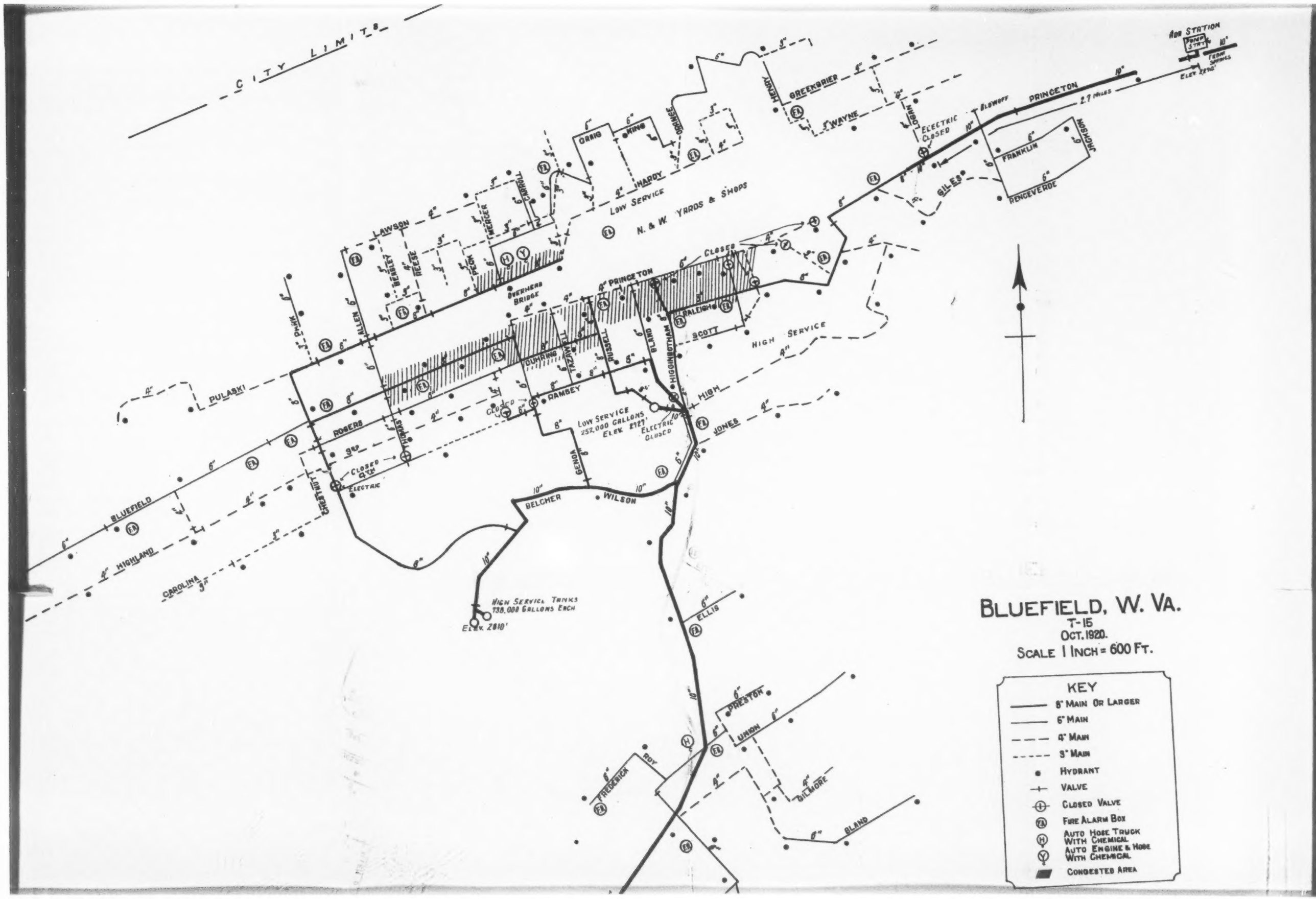
It is finally concluded that the value of the properties of the Bluefield Water Works & Improvement Company, as of January 1st, 1915, is, in round numbers, not less than five hundred and forty thousand dollars ($540,000).

Respectfully submitted,

JOHN W. ALVORD,
Consulting Engineer.

Chicago, Illinois, February 3rd, 1916.

(Here follows map of Bluefield marked page 656.)



BLUEFIELD, W. VA.

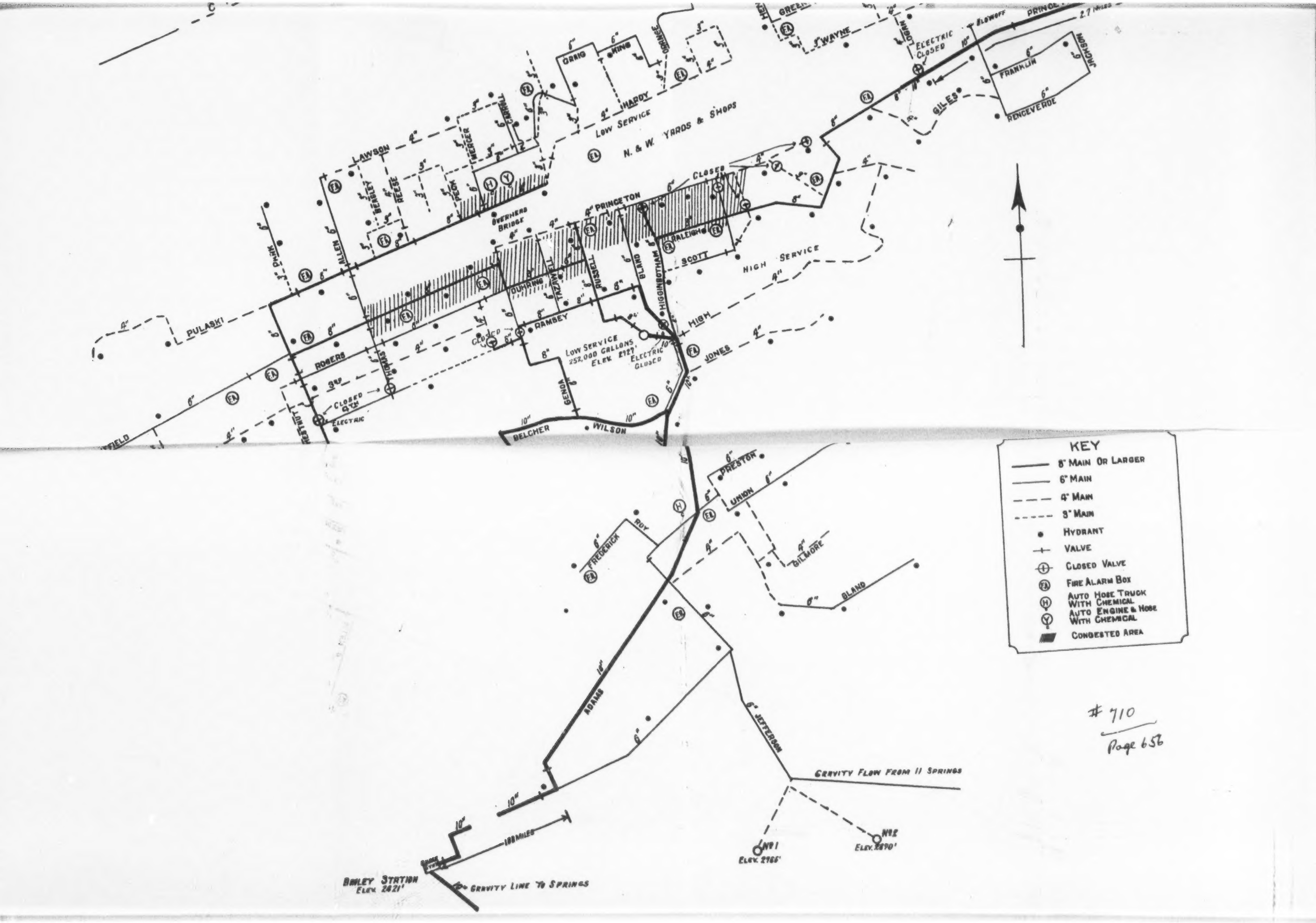
T-15

OCT. 1920.

SCALE 1 INCH = 600 FT.

KEY

- 8" MAIN OR LARGER
- 6" MAIN
- 4" MAIN
- 3" MAIN
- HYDRANT
- VALVE
- CLOSED VALVE
- FIRE ALARM BOX
- AUTO HOSE TRUCK WITH CHEMICAL
- AUTO ENGINE & HOSE WITH CHEMICAL
- CONGESTED AREA


KEY
8" MAIN OR LARGER
6" MAIN
4" MAIN
3" MAIN
HYDRANT
VALVE
CLOSED VALVE
FIRE ALARM BOX
AUTO HOSE TRUCK WITH CHEMICAL
AUTO ENGINE & HOSE WITH CHEMICAL
CONGESTED AREA
N. & W. YARDS & SHOPS
LOW SERVICE
HIGH SERVICE
LOW SERVICE 252,000 GALLONS ELEV. 2727'
ELECTRIC CLOSED
OVERHEAD BRIDGE
PRINCETON
RAMSEY
PULASKI
ROGERS
LAWSON
ALLEN
PARK
BEASLEY
REESE
PECK
MERCER
CARROLL
GRAIG
KING
ORANGE
HARDY
WAYNE
LOGAN
GILES
FRANKLIN
RENCEVERDE
JACKSON
PRINCE
BLOWOFF
2.7 MILES
RALEIGH
SCOTT
BLAND
HIGGINBOTHAM
RUSSELL
TAZAWELL
DUHRING
HIGH
JONES
GENOA
BELCHER
WILSON
PRESTON
UNION
ROY
FREDERICK
GILMORE
BLAND
ADAMS
JEFFERSON
GRAVITY FLOW FROM 11 SPRINGS
No 1 ELEV. 2965'
No 2 ELEV. 2890'
BAILEY STATION ELEV. 2421'
GRAVITY LINE TO SPRINGS
188 MILES

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Page 656

657 Part I.

The Report.

Fundamental Principles of Public Utility Valuation on Which This Valuation is Based.

The art of valuation of public utility property is a special study in three fields of knowledge:

(A) A knowledge of the law; especially its fundamental principles as affecting "property."

(B) A knowledge of finance, that is to say, the economics of business, including investment, the varying value of money, and the special hazards of various enterprises and the economic operation of utility properties.

(C) A knowledge of engineering with especial emphasis on that branch of engineering that deals with the conceiving, planning and building up of utility structures, involving a knowledge of costs and methods both in construction and operation.

The function of valuing a public property consists essentially of two distinct operations:

First. The collection of all the facts and evidence tending to throw light on the question in hand.

Second. The judicial operation of weighing the facts and evidence, apportioning to each line of evidence its relative degree of importance, and reasoning from this summation to the broader question of value. In valuation work, much confusion of thought arises from the very human anxiety to reason on the broader question before all the data is accumulated, properly digested, and placed in its proper perspective.

658 First. The facts and evidence desirable for a full understanding of the value of a utility property are as follows:

(1st.) The cost to replace the property at the present time as a going concern.

This line of investigation requires:

"A." An inventry of the present existing physical property, used and useful for the purpose of the utility.

"B." A knowledge of its earnings and expenses for a preceding series of years, and the knowledge of the amount of return that will attract capital into the business.

"C." Computation of the cost to replace the property and reproduce its income as a going concern, in a way which is humanly possible.

"D." An estimate of the loss of value in the existing property, by reason of prospective change in the requirements of the public, advances in the arts, age, or the necessity for replacement.

(2nd.) The market value of the securities of a property where a broad and representative market for such securities can be said to exist.

(3rd.) A consideration of the value of other properties similarly situated, where such value has been carefully and fully determined. This can be used only as a general check, however.

659 (4th.) The conditions which surround the particular property to be valued, such as the following:

1st. Character and enterprise of the population, its past growth and present business enterprise.

2nd. The presence or absence of judicious management of the utility property, and its conservative extension.

3rd. Freedom of the property from mishaps.

4th. The cost of next nearest available supply.

5th. The value of the service to the individual consumer.

6th. Competition, if any, and possible future contingencies arising both from changes in public demand or substitution of other supplies more acceptable to the population.

7th. The legal status of the property and attitude of the public and their representatives toward it.

(5th.) Past Cost Evidence.—In the theory of the law we are seeking the present value of the property, and unless past cost is recent past cost, it has no bearing on the inquiry except as it throws light on what present value would be.

Second. The judicial reasoning which should follow the compilation of these lines of inquiry is as follows:

(1st.) To be assured that the evidence is without material error

660 (2nd.) To determine the amount of credence to give to the witnesses who introduce evidence. This may be based largely on the extent of their practical experience in the matters in hand, the extent of their general experience, as well as their conscientiousness and freedom from bias.

(3rd.) To determie that each independent line of cost evidence introduced is in itself logical and complete, and is not confused with any other line of evidence, such as the mixing up of past cost with present cost to reproduce, etc.

(4th.) To decide what weight should be given to various lines of evidence introduced.

(5th.) To determine in each case if the line of evidence is a measure of value. If not, to reason why not.

(6th.) To determine in particular, if the cost of reproduction, including the cost of reproducing the present income of the company is, or is not, a reasonable measure of value.

661 (7th.) To finally conclude value as a matter of common sense, based on a broad and adequate review of all the facts, with an open mind, and in a judicial manner.

(8th.) To check the value so obtained by such lines of inquiry as will properly be of aid.

Reasoning from Cost to Value.

Having outlined the evidence as to value, it is next desirable to reason from these lines of evidence to value itself.

It may be taken axiomatically that where a property is properly serving a real need in an assured community with efficiency and with no immediate prospect of change in its methods or alteration in the source of supply or the demand, and with no serious mistakes in its construction or financing, that it must be worth something more than the actual cost to reproduce it up to its present state of efficiency.

The cost of reproduction conscientiously carried out presents a faithful and practical picture of what the city or utility would face if they had to build a new plant today, but like the existing plant in all respects. It considers both depreciations and appreciations, some of which are shown below:

662

Losses to utility, gain to public.	Gains to utility, losses to public.
Obsolete structures—Once valuable, now discarded.	Increased cost of land.
Expenditures originally thought wisely made but proving to be otherwise.	Increased difficulties of building plant in more dense population.
Higher prices paid for materials in the past.	Higher prices for labor and certain materials.
Losses due to "wear and tear."	Necessity of cutting through and replacing pavements.
Inadequacy due to rapidly increasing population.	Necessity of crossing under railroad which perhaps did not exist when the plant was built.
Obsolescence due to introduction of more efficient appliances.	
Depreciations of all kinds.	Appreciations of all kinds.

Clearly, if we must, by the force of correctly reasoned and carried out reproduction, eliminate all the obsolete expenditures, the mistakes of the past, the depreciation which property has suffered, we

must, as well, find the cost of reproducing the property under the present conditions, with full allowance for such obstacles as the present conditions impose upon us.

General Conclusions.

In weighing evidence as to value, it is important to remember:

663 1st. That value after all is a matter of informed and intelligent opinion.

2nd. That cost is not necessarily value.

3rd. That the courts uniformly have insisted that it is the present value, or value now, that must control.

4th. That reproduction is the nearest line of evidence to produce value now.

5th. That cost of reproduction is not necessarily value now, as a plant may be worth more or less than the cost to reproduce it now.

6th. That the value of the evidence of witnesses is in direct proportion:

(*a*) To the extent of their practical experience.

(*b*) To their breadth of view in other directions than their own profession

(*c*) To their lack of bias, as shown by their past record and testimony.

To recapitulate then, some general considerations on the art of valuation of public utilities may be summed up as follows:

1st. Caution should be observed not to reason about value until all of the evidence is in.

663½ 2nd. The cost evidence consists of the inquiry as to the cost to reproduce new, less depreciation at the present time, the cost of the plant in the past if it is recent, the cost of other plants similarly situated, the value of stocks and bonds if an adequate market exists.

3rd. In reasoning from cost to value from the lines of evidence above mentioned, careful consideration should be given to surrounding influences, not readily expressed by figures, such as, the evidence of good management, adaptation of plant to public needs, growth and future development of district served, adequacy of plant to that population and its future, and cost of next nearest method of supply possible of future displacement by changing public needs or demands.

(Here follows "Wage Curve," marked page 664.)

665 Application of These Fundamental Principles to the Water Works Properties of the Bluefield Water Works and Improvement Company.

It must be borne in mind that the principles which are here outlined cannot be applied to any individual case in an empirical way, but each specific case must be investigated and judged upon its own conditions.

Before undertaking to reason out the value of the water works property of the Bluefield Water Works and Improvement Company from the cost evidence, certain local facts must be considered which can not be properly expressed in figures.

1st. The available water supply at Bluefield is limited and unusually valuable.

2nd. The works are serving the city with good and wholesome water for domestic and manufacturing purposes. The operation of the water works is under intelligent control. It is an unusually and increasingly expensive proposition to supply Bluefield with water.

3rd. The plant is well laid out to protect the locality of greatest fire hazard, the elevation of the twin tanks being such that adequate water is furnished at good pressure for fire fighting purposes, in the business and high class residential districts.

4th. Bluefield situated as it is in a rich coal mining district, has had a steady and substantial growth, and there seems to be no reason why this growth should not continue. The city is the
666 highest point on the Norfolk & Western R. R. and its growth has kept pace with that of the business of the railroad, which at present handles over 1,000 cars of coal per day.

5th. The Bluefield cast iron distribution system has been systematically laid out and shows no waste or unnecessary duplication. It will require no replacement for a long period to come, and is therefore, an investment of a particularly permanent character.

6th. The water works service in Bluefield is "needed", that is to say, if the City of Bluefield were not served by the Bluefield Water Works & Improvement Company, it would have to immediately install a water works system of a similar kind and capacity to that existing.

7th. The water service is worth to the consumer much more than the rates charged by the Water Company, for in no other way could he transport water from the source to his faucet under pressure by his individual initiative or by any other method as cheaply as he can obtain the same service from the present plant.

8th. The elevation to which most of the water supply is lifted is very great. The pumps at the Ada Station normally operate against a pressure of 305 pounds per square inch—about four times the head

pumped against in the ordinary water works plant. This materially increases the cost of pumping over that in the average plant. The pump at the Beaver Pond Station normally operates against 350 feet head, which is nearly twice the lift of the average water works.

9th. The yield of the net income of the plant for the year ending December 31, 1914, after allowing 1% for depreciation is only 2.7% upon the value here found, which is far from being sufficient return to attract capital into an investment of this character.

667 10th. At the present time the Company has acquired practically all springs within reasonable distance of Bluefield that will yield water and still finds the supply becoming insufficient during the dry seasons. A considerable investment will, therefore, have to be made in the near future (estimated at about $240,000) for the proper additional future supply of the town, which investment will not add materially to the revenues at the present time.

In the case of the Bluefield Water Works & Improvement Company, the future supply must be drawn from greater distance than the present supply and from lower elevations. The available sources are:

1st. The Bluestone River;

2nd. Mud Fork;

3rd. Brushy Fork;

and

4th. Possibly deep wells north of the City.

In the case of the surface supplies, the water must be filtered. In all cases it will have to be lifted great heights and delivered through long pipe lines. Some study has been given to these local conditions and it has been found that either of the above sources of supply is much less valuable than the present source, and will not displace it but will only supplement it as the demand for more water grows with increasing population. It would, therefore, seem that the minimum value of the plant is strongly indicated by the fair cost of reproducing it.

668 Other Considerations Governing Value.

There are several features in connection with the property of the Bluefield Water Works and Improvement Company which require special consideration in an appraisal such as is here being made.

The placing of a value upon the water rights in the springs, that is, the value of the water only, or the value above the cost of development of the springs is a matter requiring considerable thought and study. There are two main groups of springs, one group flowing into the Bland Street tank by gravity, known as the gravity springs, and the other group, the Ada Springs, flowing to Ada Pumping Station

from which their supply is pumped into the tanks, whose elevation is from 450 to 550 feet above that of the pumping station.

It is the belief of many people in Bluefield that the value of these springs is as high as $5,000 or $10,000 each, but such figures are not substantiated as a result of a careful study of local conditions effecting the value of the spring. While it is true that all springs have some special value outside of the mere cost of development, there is no average figure that can apply. The value of any one spring is dependent upon three factors, namely, the amount of its dry weather flow, its distance from the tanks, and its elevation. Considering these three factors, it is at once obvious that the gravity group of springs is of much more value than the Ada group by virtue
669 of the fact that they flow into the Bland Street tank without any pumping expense, while the supply from the Ada Springs is lifted against a large head. The gravity springs are also located much nearer the tanks and the pipe, or investment necessary to develop them is much less than is the case with the Ada group.

In studying the value of these springs, it is helpful to know the cost of water delivered from the most next available source of supply, which in this case is believed to be the Bluestone River above Graham. If we find the cost of water from this source properly filtered and delivered at a common point like the Twin Tanks to be less than the cost from the present source, then the springs would have little value, but if we find the contrary to be true then they will be worth at least the difference in cost of water after proper development and delivery to the Twin Tanks. In studying this matter, however, it is found that the springs do have a greater value than the Bluestone supply and the proper value to be added to the value of the land and development has been found by comparing this source of supply with the Bluestone source of supply as that is believed to be the next most available source that is certain. The relative value of the gravity group of springs and the Ada Springs has been apportioned on the basis of the cost of water from the two groups, the value per group being in inverse ratio to the cost of water. Having thus apportioned the total value to each group
670 of springs, the value per group is apportioned between all the springs in each group, the value of each gravity spring being determined by the amount of its flow, its distance from the tanks, and its elevation, and the value of each Ada Spring by the amount of its flow and its distance from the tanks, the question of elevation being neglected since all the Ada supply is pumped the same height.

As a result of a careful study along the lines outlined above, it has been shown that the value of the springs is not as large as perhaps many of the people of Bluefield who have had springs to sell seem to believe.

Another feature is the fact that the cost of spring development is unusually high owing to the rough nature of the country and the rock encountered in excavating for pipe lines and buildings.

Bluefield is on the summit of a divide and there are very small water supplies around or near the city without going downhill and

a long way for it, thus necessitating unusually high investment charge and operating expense. The rough character of the town site necessitates many different elevations of service, a fact which does not enter into consideration on the part of the ordinary or average plant.

Procedure in Estimating the Cost of Reproduction.

As it seems inevitable that the cost of reproduction is the most important line of evidence from which to reason value, in this case special attention has been given to this line of evidence.

671 In reproducing a plant and property, the following principles must apply:

1st. The reproduction must be along lines which are humanly possible, and in accord with practical experience.

2nd. It is entirely an estimating process, and therefore, to be correct must be founded on a long and wide experience in actual works.

3rd. It is based on a working plan, in which the time adopted for the process is a most important element.

4th. A reproduction, to be practical, must be predicated upon a reasonable construction and development period in the near future, and then reduced to present worth where necessary.

5th. The costs for this near future must be based upon the prices of the recent past, just as any engineer entering into new work determines the probable future costs.

6th. The reproduction is not complete until the plant is financed to a paying basis.

The essential feature of reproduction involves the actual process step by step, of constructing a duplicate plant, which, when completed in a reasonable and workable period of time will be exactly similar to the one under construction in both physical and earning capacity.

In rebuilding the plant of the Bluefield Water Works & Improvement Company, it would be necessary, first of all, to form a conservative working plan or schedule of operations which will be practicable and possible. This schedule in this case is outlined as follows:

672 Time of Construction.

It is assumed that the plant is first originated on January 1st, 1915 (the date of this estimate), and that the physical plant is constructed complete in one year from that date or January 1st, 1916.

It is believed from experience that at least four months would be occupied in preliminary investigation and in general engineering and business investigations and in negotiations with the city pre-

paratory to the passing of the necessary franchise ordinance. During this time, the necessary real estate would have to be purchased, detailed engineering plans for construction would be drawn, contracts for the construction of the springs with their pipe lines to the city would be advertised and let, and work would be commenced upon them immediately. Contracts for the distribution system and station buildings would be let in May and the construction work on these parts of the plant would begin June 1st. As soon as the progress on the station building would permit, the machinery could be installed. The work on the pipe system and tanks, as well as the installation of pumps, boilers and piping would be completed late in December, a month or six weeks after the completion of the work on the water supply, so that the entire plant would be thrown into operation on January 1st, 1916.

673 The physical plant would then be identical with the present physical plant of the Bluefield Water Works & Improvement Company. In the same manner, the income of the plant must be acquired and developed until it is equal to that of the existing plant. It is estimated that four years will be required for this purpose and that by January 1st, 1920, this hypothetical plant would be identical financially as well as physically with the now existing plant.

The appraiser's responsibility is precisely the same as that which he would have to encounter as an engineer in planning and constructing any piece of new work with which he might be charged. He is much concerned with the proper selection of unit prices, and it is deemed expedient to briefly discuss the selection of fair and reasonable "unit prices".

674 Unit Prices.

In a reproduction estimate, unit prices must be selected on the theory of wholesale construction, rather than of piecemeal construction. Those are the "normal" prices for material and labor in Bluefield, based upon the local prices and upon a general knowledge of the fluctuations of these prices from time to time. In the large majority of cases, this normal price is identical with the prevailing market price. Most of the materials entering into the construction of a water works plant do not suffer from considerable market variations. In the case of some items, however, notably cast iron pipe, the fluctuations even during a single year are so rapid as to make it seem unfair and unreasonable to adopt the price at any one moment. One would also have to face the contingency of a rise in prices before it would be possible to let contracts for pipe.

Appended to this report will be found a diagram showing fluctuations in the price of cast iron pipe and pig iron, F. O. B. Chicago, since 1885. From this diagram the fluctuations of the price of pipe in the past will readily be seen and the explanation given above will be more apparent. In order to arrive at the normal price for pipe in the future, one has only the knowledge of the past for a guide, and the prices have, therefore, been based upon the average cost of

pipe in the vicinity of Bluefield during the past five years. The five year Average at Chicago gives a price of $27.36 for 4"; 675 $25.71 for 6" to 12" and $24.94 for 16" and larger. In obtaining the average price for Bluefield, $1.30 per ton was deducted from the Chicago prices to allow for the difference in freight rates.

The following memoranda of prices prevailing in Bluefield, obtained from the City and County engineer and others there, have been helpful principally in observing that no abnormal situation exists:

Common labor	$1.75 per 10 hour day.
Caulkers, yarners	2.25 " " " "
Pipe foreman	3.50 " " " "
Carpenters	4.00 " " " "
Brick Masons	4.50 " " " "
Stone Masons	4.50 " " " "
Teams and Drivers	4.00 to 4.50 per 10 hour day.

Lumber:

Rough chestnut	20.00 per M.
" popular and pine 1" sheathing	19.00 " "
" oak and chestnut 1" sheathing	16.00 " "
Pine trim S4S	35.00 " "
Popular trim S4S	45.00 " "
Pine flooring 7/8" S4S T. & G.	30.00 " "
Brick—Common	8.50 " "
" —No. 1	9.00 " "
" —rough faced	12.00 " "
Fire brick	22.50 to 27.50 per M.
Fire clay	4.50 per ton.
Cement	1.70 per bbl.
Sand	1.30 " cu. yd.
Gravel	1.25 " " "
Crushed stone	1.25 " " "

676 Unit prices in this estimate of reproduction in all cases assume conditions as they exist in Bluefield now, and not in the past. Thus, it will be necessary to cut through pavement, avoid underground obstructions, obtain the benefit of the sewer system, and in many other ways, adopt prices and conditions which did not exist when the plant was built; on the other hand, all obsolete structures which have disappeared are not included.

677 Depreciation.

Depreciation is the loss of value of the Company's property which the courts have said the public must make good through the rates. The public and the Company are, therefore, only interested in ascertaining what the fair amount to be returned to the Company shall be.

Depreciation is more than "wear and tear". It is loss in value due to any cause whatever. Water works structures seldom lose value by "wear and tear"; they are most often rendered obsolete by being outgrown or by changing conditions of public demand. Accordingly, the common interpretation of depreciation as "the decrease in utility value of a structure due to wear and tear" only applies to a very small part of the total loss of value which a plant experiences from age and service.

A piece of pumping equipment, if well maintained, would probably be capable of pumping water for eighty to one hundred years or longer, but observations in a great number of plants have shown that the average pumping engine is commonly discarded after about thirty-five or forty years' service due to the necessity for a larger machine to serve increased population.

As with pumps, so it is with other parts of the plant. A source of supply depends upon its adaptability to the changing demands such as the increased consumption, continued purity, necessity for filtration, development of economical delivery and other factors
678 which may be entirely independent of its ability to meet the conditions for which it was originally developed. The distribution system may be in good condition, but due to growths in population it may in some parts become inadequate for increased consumption in which case it can be increased by larger mains cutting into and through the older system. The computation of depreciation, therefore, involves:

1st. A knowledge of the life of the structure due not only to "wear and tear" but to changing conditions.

2nd. A study of the adaptability of a structure and its ability to perform the work for which it was designed economically and the probable length of time over which it can meet these requirements.

3rd. An allowance in addition to the above two amounts to cover unforeseen expense and contingency which arise through the operation of a public utility property.

The ordinary method of estimating the depreciation of a structure is by means of the "sinking fund". This method assumes that the loss in value of the structure is equivalent to the increase in value of the sinking fund which will amortize the structure at the end of its useful life. The annual addition to the fund each year is considered to be the average annual depreciation, and the accumulation of the fund at any time is assumed to be approximately equal to the amount of the accrued depreciation the structure has
679 suffered at that date. By this method the depreciation small at first gradually increases as the end of the life of the structure is approached.

The "straight line" method, a rough and approximate method sometimes used, involves a simple division of the total value of the structure into a number of parts equal to the number of years which the structure has been estimated to live, and no interest or compounding effect is computed.

The straight line method is, therefore, an inaccurate method as commonly used because interest accretions are not considered. Interest on the annual accretions of a straight line depreciation fund should be credited somewhere to be correctly treated.

The sinking fund method is used in this report.

680 Going Value.

What It Is.

Going Value is a very poor name which is commonly used to define:

(*a*) "The value of a created income,"

or better,

(*b*) "The cost of financing a physical plant into the possession of an adequate income,"

or more definitely and completely,

(*c*) "The cost outside of the physical plant of diverting capital from one path where it formerly earned return into the new line of activity, where, through the medium of the physical property, it may again in time come to earn proper return."

To illustrate this case, if the City of Bluefield should decide they wanted to own the water works property of the Bluefield Water Works & Improvement Company, but were unwilling to offer more than the bare cost of the physical plant, what would be their alternative?

Obviously, first of all, they would have to duplicate it with a plant of equal capacity and efficiency. Now, leaving out for the moment all considerations of rivalry, and assuming that the original or existing plant went out of business when the city was ready to operate it, it will be seen that under no imaginable conditions
681 could they finance this transaction without incurring costs, and losses, the sum of which would have to be added to the physical plant cost.

In the first place, during the year which would be occupied in building, they would lose the income derived by the existing plant now in operation, although to offset this there would be a small saving in interest on such capital as was yet unemployed, but the net loss would be large.

Then after the physical plant was finished, the city would have to begin to operate it at a loss while they were getting customers and building up business. Naturally most large consumers would be quickly taken over, and the first year might show a very considerable proportion of the total revenue to be acquired. The outlying districts, the small consumer, the man who could get a ground water well in his back yard, would, however, be slow to change, and two or three years, in some cases, three or four years, would be

required to recover all of the revenue that would have been enjoyed by the original plant had it continued to do business.

Obviously, a careful accounting of all of these debits and credits would show the financial advantage which the original plant had in the way of income over the cost of building and financing any new plant into possession of such an income.

Such a procedure can be properly outlined and judged by anyone having requisite experience in building and operating plants and obtaining customers.

682 Going value, therefore, consists of the elements of earning power which a plant possesses, growing out of its having an assured business in excess of what any new plant starting without any business would have.

Method of Computing Going Value.

The method of computing going value which is used in this report is as follows:

The comparative method in which the measure of going value is the yearly amounts of revenue reduced to present worth which an old operating plant will produce in excess of what new works of like character can be made to produce between the time of purchase and that time in the future when the revenue of the two works become equal. This method is composed of two parts: first, the assumptions to be derived from the experience in operating similar properties, and second, the accounting which sums up that experience.

If the "Cost of Reproduction" is a logical method of finding the value of the physical plant as the courts have repeatedly held, it is also reasonable to compute the value of the developed business in a similar way, and that has been done in this report by the "Comparative Method."

Estimates of the Cost of Reproduction.

Water Works Depreciation Estimate.

Bluefield, W. Va.

John W. Alvord, Consulting Engineer, Chicago, Ill.

Date, January 1st, 1915.

(Sinking Fund Method, Contributions at End of Year. Interest Compounded Annually.)

Preliminary Cost and Real Estate.

Item.	Reproduction cost, $.	Date of const.	Est'd life, in years.	Int. rate, %.	Annual depreciation. Percent.	Annual depreciation. Amount, $.	Total depreciation. Age, years.	Total depreciation. Factor, %.	Total depreciation. Amount, $.	Net physical value.
1. Preliminary Cost	$14,455	....	..	..	.....	...	..	....	....	$14,455
2. (*a*) Real Estate	17,860	....	..	..	.....	...	..	....	....	17,860
(*b*) Rights-of-Way	5,102	....	..	..	.....	...	..	....	....	5,102
(*c*) Buildings and Improvements	11,002	....	..	..	.....	...	..	....	....	11,002
Totals	$48,419	....	..	..	.....	...	..	....	....	$48,419
The Water Supply.										
3. The Gravity Springs	$14,645	1908	75	4	.214	$92	7	1.76	$759	$13,886
Water Rights	40,000	....	..	..	.....	...	..	....	....	40,000
4. The Ada Springs	19,231	1910	75	4	.214	121	5	1.2	673	18,558
Water Rights	6,683	....	..	..	.....	...	..	....	....	6,683
6. Beaver Pond Spring—No. 23.	137	1899	25	4	2.31	3	16	52.4	72	65
Water Rights	2,317	....	..	..	.....	...	..	....	....	2,317
8. Pipe line from Gravity Springs to City	22,467	1908	75	4	.214	48	7	1.76	395	22,072
9. Pipe line from Ada Springs to City	54,487	1908	75	4	.214	117	7	1.76	959	53,528

10. Pipe line from Beaver Pond to City	4,173	1892	75	4	.214	9	23	8.2	342	3,831
Totals—Water Supply	$165,140	....	..	..	.....	$390	..	....	$3,200	$161,940
Carry forward—Totals	$213,559	....	..	..	.....	$390	..	....	$3,200	$210,359

Brought forward—Totals	$213,559	....	..	..	.....	$390	..	....	$3,200	$210,359
11. The Ada Station Building	15,062	1906	50	4	.63	95	9	6.9	1,039	14,013
12. Steel Stack	2,391	1906	30	4	1.71	50	9	18.9	554	2,377
13. Coal Chute	868	1906	50	4	.63	5	9	6.9	60	808
14. Oil House	168	1906	50	4	.63	1	9	6.9	12	156
15. The Worthington Pump	1,439	1900	20	4	3.23	46	15	67.2	967	472
16. The Snow Pump	16,645	1906	40	4	1.012	168	9	11.2	1,864	14,781
17. Auxiliaries	1,049	1906	30	4	1.71	18	9	18.9	198	851
18. Boiler Plant	6,444	1906	25	4	2.31	149	9	25.4	1,637	4,807
19. All piping in Station	1,639	1905	30	4	1.71	28	9	18.9	310	1,329
20. Piping in Station Yard	1,348	1906	50	4	.63	8	10	7.9	107	1,241
21. Concrete Retaining Wall	1,295	1907	50	4	.63	8	8	6.03	78	1,217
22. Station Yard Improvements	3,916	1907	50	4	.63	25	8	6.03	236	3,680
23. Station Miscellaneous	1,400	1904	25	4	2.31	32	11	32.4	454	946
24. Beaver Pond Station Building	984	1911	15	4	4.8	47	4	21.8	214	770
25. Steel Stack and Breeching	260	1911	15	4	4.8	12	4	21.8	57	203
26. Worthington Pump	801	1892	35	4	1.31	10	23	49.8	399	402
27. Feed Water Heater	93	1892	35	4	1.31	1	23	49.8	46	47
28. Boiler Plant	2,986	1899	25	4	2.31	69	16	52.4	1,565	1,421
29. All Piping in Station	410	1900	30	4	1.714	7	15	35.7	146	264
30. Intake and Pipe Line to Pumping Station	238	1892	50	4	.63	2	23	24.0	57	181
31. Station Miscellaneous	22	1900	30	4	1.714	1	15	35.7	8	14
Total—Pumping Station	$59,988	....	..	..	.....	$782	..	....	$10,008	$49,980
Carry forward—Totals	$273,547	....	..	..	.....	$1,172	..	...	$13,208	$260,339

Item.	Reproduction cost, $.	Date of const.	Est'd life, in years.	Int. rate, %.	Annual depreciation. Percent.	Annual depreciation. Amount, $.	Total depreciation. Age, years.	Total depreciation. Factor, %.	Total depreciation. Amount, $.	Net physical value.
Brought forward—Totals....	$273,547	....	..	..	.....	$1,172	..	....	$13,208	$260,339
				The Distribution System.						
32. Cast Iron Street Mains.....	43,989	1903	92	4	.107	47	12	1.67	735	43,254
33. Cast Iron Specials on Street Mains	1,927	1903	92	4	.107	2	12	1.67	32	1,895
34. Laying Cast Iron Street Mains	19,579	1903	92	4	.107	21	12	1.67	327	19,252
35. Galvanized Iron Street Mains	7,676	1903	30	4	1.71	131	12	26.8	2,057	5,619
36. Laying G. I. Street Mains...	7,907	1903	30	4	1.71	135	12	26.8	2,119	5,788
37. Extra for Unusual Excavation	10,263	1903	92	4	.107	11	12	1.67	171	10,092
38. Steam Railroad Crossings...	1,415	1903	92	4	.107	1	12	1.67	24	1,391
39. (*a*) Street Ry. Crossings over C. I. mains.....	356	1903	92	4	.107	1	12	1.67	6	350
(*b*) Street Ry. Crossings over G. I. Mains.....	82	1903	30	4	1.71	1	12	26.8	22	60
40. (*a*) Cutting Pavements over C. I. mains.....	26,846	1903	92	4	.107	29	12	1.67	448	26,398
(*b*) Cutting Pavements over G. I. Mains.....	1,839	1903	30	4	1.71	31	12	26.8	493	1,346
41. Valves on Mains.....	3,138	1903	50	4	.63	20	12	9.8	308	2,830
42. Valve Boxes on Mains.....	546	1903	50	4	.63	3	12	9.8	54	492
43. Fire Hydrants.....	435	1903	50	4	.63	3	12	9.8	43	392
44. Services—Unusual Excavation Cutting Pavement....	24,395	1903	50	4	.63	154	12	9.8	2,391	22,004
45. Meters in Service.....	14,292	....	..	..	.....	462	..	....	3,573	10,719
Carry forward.....	$164,685	....	..	..	.....	$1,052	..	....	$12,803	$151,882

Brought forward.....	$164,685	....	..	..	.....	$1,052	..	....	$12,803	$151,882
46. Meter Boxes and Vaults.....	7,547	1903	50	4	.63	48	12	9.8	740	6,807
47. Twin Tanks.....	33,506	1906	30	4	1.71	573	9	18.9	6,333	27,173
48. Bland Street Tank.....	6,944	1892	30	4	1.71	119	23	65.3	4,534	2,410
49. Electric Transmission Line..	653	1913	25	4	2.31	15	2	4.9	32	621
Totals—Distribution System	$213,335	....	..	..	.....	$1,807	..	....	$24,442	$188,893
Miscellaneous.										
50. Laboratory Equipment.....	$250	....	..	..	.....	...	..	....	....	$250
51. Office Furnishings.....	1,100	....	..	..	.....	...	..	....	....	1,100
52. Materials and Supplies.....	8,100	....	..	..	.....	...	..	....	....	8,100
53. Engineering & Superintending	22,395	....	..	..	.....	$150	..	....	$1,880	20,515
54. Administrative & Legal Costs.	8,960	....	..	..	.....	60	..	....	755	8,205
55. General Contingent Costs...	17,920	....	..	..	.....	120	..	....	1,505	16,415
56. Interest During Construction.	16,368	....	..	..	.....	99	..	....	1,254	15,114
Totals—Miscellaneous....	$75,093	....	..	..	.....	$429	..	....	$5,394	$69,699
Total Value—Physical Plant	$561,975	....	..	..	.....	$3,408	..	....	$43,044	518,931
57. Going Concern Value.....	16,328	....	..	..	.....	...	..	....	....	16,328
Total Cost of Reproduction	$578,303	....	..	..	.....	$3,408	..	....	$43,044	$535,259
58. Operating Capital.....	.....	....	..	..	.....	...	..	....	....	5,000
Total Reproduction Value Including Operating Capital										$540,259

686½ *Preliminary Costs.*

Real Estate and Easements.

687 Item No. 1. Preliminary Cost.

Includes all costs preliminary to the development of a precise plan of construction, such as:

(*a*) Business investigations and negotiations.
(*b*) Expert preliminary engineering reports.
(*c*) Legal Advice.
(*d*) Special engineering investigations for source of water supply.
(*e*) Optioning Real Estate (Cost of).
(*f*) Organization of Company.
(*g*) Acquisition of Franchise.
(*h*) And, in general, all costs such as are incidental to the proper placing of the interprise upon a definite basis up to the point where detailed plans may be prepared and actual construction begun.

This item is taken at 3% of the reproduction cost of Items Nos. 2 to 52 inclusive, amounting to.....$14,455.00

Item No. 2. Real Estate and Rights-of-Way.

Real estate appraised by Donohue & Easley, prominent real estate men of Bluefield. The values determined by these men have been adopted for use in this report.

(*a*) Real Estate.

The grant of spring tract includes the right-of-way for the pipe lines through the owner's farm.

Gravity Springs:

No. 1—11/21/'87—Estill Bailey & Wife, Jos. I. Doran, 0.5 acre @.....	$25.00
No. 2— 9/28/'87—John T. Bailey & wife, Jos. I. Doran, 0.5 acre @.....	25.00
Carry forward.....	$50.00

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Brought forward.....	$50.00
No. 3— 7/23/'90—John T. Bailey, Jos. I. Doran & J. H. Dingee 0.5 acre @.....	15.00
No. 3— 2/21/'11—John T. Bailey & Wife, B. W. W. & I. Co., 1.128 A. @.....	35.00
No. 4— 7/23/'90—John T. Bailey, Jos. I. Doran & J. H. Dingee, 0.5 acre @.....	13.00

No. 4— 2/21/'11—John T. Bailey & Wife, B. W. W. & I. Co., 1.750 A. @.....	47.00
No. 5— 7/17/'90—A. W. Bailey & Wife, Jos. I. Doran & J. H. Dingee, 0.5 acre @.....	25.00
No. 6— 7/17/'90— A. J. Bailey & Wife, Jos. I. Doran & J. H. Dingee, 0.5 acre @.....	13.00
No. 6— 7/31/'06—C. A. Bailey & Wife, B. W. W. & I. Co., 1.91 A. @.....	47.00
No. 6— 5/20/'08—C. A. Bailey & Wife, B. W. W. & I. Co., 2.50 A. @.....	65.00
No. 7 & 8—5/20/'08—C. A. Bailey et ux., et al., B. W. W. & I. Co., 1.50 A. @.....	50.00
No. 9— 6/ 4/'08—Robt. W. Tuggle & Wife, B. W. W. I. Co., 1.17 A. @.....	25.00
No. 10—6/ 4/'08—Robt. W. Tuggle & Wife, B. W. W. & I. Co., 0.30 A. @.....	25.00
No. 11—6/ 4/'08—Robt. W. Tuggle & Wife, B. W. W. & I. C., 0.35 A. @.....	25.00
Ada Springs:	
No. 12—12/13/'10—Thos. P. Morgan & Wife, B. W. W. & I. Co., 0.35 A. @.....	25.00
No. 13—12/13/'10—Thos. P. Morgan & Wife, B. W. W. & I. Co., 0.37 A. @.....	25.00
No. 14—12/13/'10—Thos. P. Morgan & Wife, B. W. W. & I. Co., 0.51 A. @.....	25.00
No. 15— 6/ 7/'09—R. H. Bailey & Wife, B. W. W. & I. Co., 236.25 A. @.....	5,000.00
No. 16— 7/22/'09—R. H. Bailey & Wife, B. W. W. & I. Co., 1.06 A. @.....	25.00
No. 17— 7/22/'10—Ballard P. Wilson & Wife, B. W. W. & I. Co., 1.99 A. @.....	50.00
No. 18— 7/22/'10—Walter T. Bailey & Wife, B. W. W. & I. Co., 41.88 A. @.....	975.00
Carry forward.....	$6,560.00
689	
Brought forward.....	$6,560.00
No. 18—12/24/'10—Walter . Bailey & Wife, B. W. W. & I. Co., 1.11 A. @.....	25.00
No. 20—10/14/'05—W. H. Thompson & Wife, B. W. W. & I. Co., .0578 A. @.....	25.00
No. 21—12/20/'00—W. H. Thompson & Wife, B. W. W. & I. Co., 2.00 A. @.....	100.00
No. 22—10/ 1/'07—Estill Bailey & Wife, B. W. W. & I. Co., 0.46 A. @.....	25.00
Jarrell Spring:	
No. 19—10/14/'05—Mariha S. Jarrell, et al., B. W. W. & I. Co., 1.00 A. @.....	25.00

Beaver Pond Spring:

No. 23—5/5/'92—Carmack Bailey, et al., B. W. W. & I. Co., 1.00 A. @ 500.00

Twin Tanks:

1/22/'97—H. M. Nash, et al., B. W. W. & I. C., 15.25 A 2,000.00

Bland Street Tank:

Lot 5—Sec. 88—Bluefield 500.00

Office:

Lot 1—Sec. 22—Bluefield 5,000.00

Ada Pumping Station:

7/27/'00—Estill Bailey & Wife, B. W. W. & I. Co., 0.50 A 30.00
10/ 1/'07—Estill Bailey & Wife, B. W. W. & I. Co., 1.12 A 70.00

Honaker Mill Reservoir and Dam:

10/1/'07—Estill Bailey & Wife, B. W. W. & I. Co., 99.36 A 2,500.00

Ruble Farm:

1/18/'08—H. C. Ruble & Wife, B. W. W. & I. Co. 46.50 A 500.00

$17,860.00

Total Present Worth (*a*) $17,860.00

690 (*b*) Rights-of-Way.

Beaver Pond and Gravity Spring Lines:

9/28/'87—Nancy Williams to Jos. I. Doran	$25.00
" —Catherine Davidson to Jos. I. Doran	25.00
" —Eliza Bailey to Jos. I. Doran	25.00
8/14/'90—Mary E. Hale to Jos. I. Doran & J. H. Dingee	45.00
" —Catherine Davidson to " " "	45.00
3/10/92—E. J. Bailey & Wife to B. W. W. & I. Co...	30.00
3/15/'92—Eliza Bailey " "	25.00
" —H. B. Bailey & Wife " "	100.00
" —Jas. R. Calfee & " " "	65.00
" —Jno. P. Williams et al. to "	225.00
" —T. M. Calfee et al. to "	40.00

Ada Spring Lines:

2/28/00—Boyd S. Belcher & Wife to B. W. W. & I. Co	400.00
" —Jas. Hearn " " " "	100.00
" —Mary E. Roland & Husband to "	100.00
7/13/00—R. M. Calfee " "	50.00
" —Jas. Hearn & Wife " "	1.00
" —E. J. Bailey & Wife " "	100.00
7/13/00—Geo. P. Bailey & wife " "	100.00
" —Eliza P. " " " " "	100.00
7/27/00—Estill Bailey " " " "	25.00
7/30/00—J. W. Caldwell " " " "	25.00
8/6/00—G. B. Higgenbottom et al. " "	1.00
8/16/00—Rebecca Bailey " "	75.00
10/21/09—Lucy J. Taylor " "	50.00
7/22/10—Jno. W. Wilson & wife " "	150.00
8/4/10—A. B. Helton " " " "	75.00

Jarrell Spring Line:

2/28/00—Jno. Eagle to B. W. W. & I. Co.....	100.00
12/6/09—C. W. Mills et al. to B. W. W. & I. Co.....	200.00
Construction of spring, pipe lines, concrete houses and water troughs for former owners of spring tracts, as consideration for permission to build and maintain springs and lines.....	2,800.00
Total (*b*)	$5,102.00

691 (*c*) Buildings and Improvements.

At Beaver Pond Springs:

One three room and enclosed porch one story, frame cottage, built about 1892 on stone foundation.
Area main floor = 708 sq. ft.
Cubical contents, outside dimensions from bottom of foundation to average height of roof = 11,376 cu. ft.
House is well painted and in good condition.

Present worth $400.00

At Ada Pumping Station:

One three room, one story frame cottage built about 1902 on wooden posts. It is unpainted and in poor repair.
Area of main floor = 457 sq. ft.
Cubic contents, outside dimensions from top of foundation to average height of roof = 6,250 cu. ft.

Present worth..... 350.00

At Spring No. 6:

Frame tool house, built of rough lumber about 1911. It is unpainted, in poor repair, and is not used at present.

Area of floor = 151 sq. ft.

Cubic contents, outside dimensions from bottom of sills to average height of roof = 1,238 cu. ft.

Present worth 25.00

Carry forward $775.00

692 Brought forward $775.00

At Spring No. 15 (Henry Bailey Farm):

This farm is in good order. It has a young orchard of about 40 trees, a 2 story house, barn, and a spring house.

The farm house is an 8 room, two story frame structure on masonry piers, built about 1900. The house is painted and in good repair.

Area of main floor = -,680 sq. ft.

Cubic contents, outside dimensions, from top of piers to average height of roof = 13,300 cu. ft.

Present worth 2,000.00

The barn and crib is built of rough lumber, and the cubical contents, outside dimensions from bottom of sills to average height of roof = 10,640 cu. ft.

Present worth 300.00

The spring house is of rough frame construction, whose cubical contents = 410 cu. ft.

Present worth 35.00

The fence includes the following quantities:

4,450 lin. ft. rail fence	@	$.05..	$222.50
7,200 " woven fence with 1 strand barb wire on top	@	.05..	360.00
720-locust fence posts 8′ long	@	.65..	468.00
			1,050.50

Carry forward $4,160.50

693 Brought forward $4,160.50

At Spring No. 2. (Ada Spring):

A small farm house and outbuildings are located near this spring. Built about 1902.

The farm house is a four room, one story unpainted frame structure, whose cubical contents, outside dimensions = 7,100 cu. ft.

Present worth 450.00

The barn is a rough frame structure, whose cubical contents, outside dimensions = 2,170 cu. ft.

Present worth 75.00

The spring house is a frame building covered with 1" sheathing and weatherboard, and with 1" pine floor. The cubical contents, outside dimensions = 425 cu. ft.

Present worth 25.00

The dairy or root house is a frame house containing 200 ft. B. M. of lumber, covered with earth, and whose cubical contents = 186 cu. ft.

Present worth 20.00

The tool house is a rough frame building whose cubic contents, outside dimensions = 840 cu. ft.

Present worth 40.00

Carry forward $4,770.50

694 Brought forward $4,770.50

The board walks contain 400 ft. B. M.

Present worth 20.00

The fences contain the following quantities:

5,100 ft. B. M. solid board fences	@	$50.00	$255.00	
1,750 lin. ft. of barb wire.....	@	.01	17.50	
55 small posts, 8' long.....	@	.25	13.75	
				286.25

At Ruble Farm (Jarrell Spring):

The farm house is a 5 room, one story frame building on cut stone foundation and with cut stone chimney. The house is unpainted and the chimney and foundation contains 550 cu. ft. of cut stone. The cubic contents, outside dimensions = 8,100 cu. ft.

Present worth 600.00

Not in total.*

The tool house is an unpainted, rough frame building, with clap board roof.

Present worth 25.00

*In pencil in copy.

Office Building:

Built in 1912 with concrete foundation and outside walls of brick veneer, set against building paper on 1″ sheathing. The roof is 1″ sheathing covered with galvanized shingles and contains 4 dormer windows.

Carry forward $5,701.75

695 Brought forward $5,701.75

The basement has a concrete floor and is subdivided by board and plaster walls. The main floor is plastered throughout and the attic is unfinished except for a rough floor.

All basement windows are barred. The main floor trim is first quality pine, painted with white enamel. The doors and windows are fitted with brushed brass fixtures.

Two iron safes are built into the wall and a vault 19′ 0″ x 9′ 6″ in plan built of concrete and brick fitted with iron doors set in the middle of the building.

The entire building is electric lighted and is heated with a hot water heating system. Two toilets and a sink are in the basement and there is a sink and lavatory on the main floor.

A speaking tube system is enclosed between the walls. The lot was graded before the building was erected. Total grading 420 cu. yds.

Main floor area = 1,282 sq. ft.

Cubic contents, outside dimensions basement floor level to average height of roof = 50,310 cu. ft.

Present worth 4,500.00

Carry forward $10,201.75

696 Brought forward $10,201.75

The Garage:

The garage is a brick building built in connection with the office building. The foundation is of concrete with outside walls 8″ thick. The roof is of tine on 1″ sheathing and is supported from the side walls. The center beam is trussed with two rods and turnbuckles. A 6″ x 6″ galvanized iron sky light is placed over the room used as a blacksmith shop. The floor of the vestibule and truck room is of concrete, the latter containing a concrete pit 3′ 0″ x 7′ 0″ x 4′ 6″ (inside dimensions), with a loose board cover made of 2″ x 8″ lumber. Interior partition walls and ceilings are covered with pressed galvanized iron. All windows are barred.

Total floor area = 580 sq. ft.
Cubic contents, outside dimensions, from bottom of footings to top of walls = 9,200 cu. ft.

Present worth	800.00
Total Present Worth (*c*)	$11,001.75

Summary Item No. 2.

(*a*) Real Estate	$17,860.00
(*b*) Rights-of-Way	5,102.00
(*c*) Buildings & Improvements	11,001.75
Total present worth item No. 2	$33,963.75

Item No. 3. The Gravity Springs.

(*a*) Spring No. 1.

(1) Land Improvements:			
Clearing ½ acre of brush and deadwood	@	$100.00	$50.00
100 cu. yds. earth and loose rock excavation in leveling up land	@	.50	50.00
36½ rods woven wire fence	@	.60	21.90
600 lin. ft. barb wire	@	.00¾	4.50
60 fence posts 8′ long, chestnut	@	.30	18.00
(2) Infiltration Lines:			
20 lin. ft. 6″ vit. tile in 4′ rock trench	@	2.25	45.00
20 " " 4″ " " " " " "	@	2.25	45.00
13 cu. yds. blasted stone hammered to small bits	@	1.00	13.00
(3) Head House:			
Area of floor = 22½ sq. ft.			
Cubic contents, outside dimensions, from top of concrete to average height of roof = 174 cu. ft.			
4 cu. yds. of rock excavation	@	4.00	16.00
1.7 cu. yds. concrete in basin	@	20.00	34.00
1 frame superstructure bolted to concrete. Framework 2″ x 4″ pine covered with 1″ rough sheathing and pine weatherboarding with trim. Roof, painted and dipped shingles, on 1″ sheathing. One door made of 2 layers of 1″ pine, tongue and groove lumber, and fitted with 3 strap hinges and padlock. Building painted 2 coats outside	@	$35.00	35.00
Carry forward			$297.40

698 Brought forward				$297.40	
1 iron screen over outlet box 8″ x 16″	@	.75		.75	
(4) Piping in Head House:					
Blow-off (Ave. depth 2′):					
9′ 0″—4″ C. I. pipe, H. & S.	@	.50		4.25	
9′ 0″—4″ vitrified tile	@	.25		2.25	
1 —4″ gate valve, set	@	8.65		8.65	
					$348.55

(b) Spring No. 2.

(1) Land Improvements:				
Clearing ½ A. of brush and deadwood	@	100.00	50.00	
100 cu. yds. of earth fill (ave. 300 ft. wheelbarrow haul)	@	.75	75.00	
39 rods woven wire fence	@	.60	23.40	
636 lin. ft. barb wire fence	@	.00¾	4.77	
64 fence posts 8′ long, chestnut	@	.30	19.20	
(2) Infiltration Lines:				
90 lin. ft. 4″ vitrified tile in 4′ trench (½ clay and ½ boulders)	@	1.00	90.00	
20 cu. yds. boulders hammered to small pieces	@	1.00	20.00	

(3) Head House:

Area of floor = 21 sq. ft.

Cubic contents, from top of concrete basin to average height of roof, outside dimensions = 167 cu. ft.

The Water Supply.—Continued.

4¾ cu. yds. of earth excavation	@	.50	2.37	
2 " " " concrete in basin	@	20.00	40.00	
1—8" x 16" iron screen over outlet box	@	.75	.75	
1—Frame superstructure	@	35.00	35.00	
			$360.49	$348.55
Carry forward				$348.55
699 Brought forward			$360.49	
Brought forward				

(4) Piping in Head House:

Blow-off (Ave. depth 2 ft.):

5′ 6"—4" C. I. pipe, H. & S.	@	.50	2.75	
10′ 0"—4" vitrified tile	@	.25	2.50	
1 —4" gate valve, set	@	8.65	8.65	
				374.39

(c) Spring No. 3.

(1) Land Improvements:

Clearing 1.628 A. of brush and deadwood	@	100.00	162.80	
75 cu. yds. of grading around head house	@	.50	37.50	
115 rods woven wire fence	@	.60	69.00	
190 fence posts, 8′ long, chestnut	@	.30	57.00	

(2) Infiltration Lines:

10 lin. ft. 6″ vitrified tile in 4′ trench (2/3 solid rock)	@	1.50	15.00	
1,035 lin. ft. 4″ vitrified tile in 4′ trench (2/3 solid rock)	@	1.50	1,552.50	
234 cu. yds. of boulders hammered to small pieces	@	1.00	234.00	

(3) Head House:

Area of floor = 18.6 sq. ft.
Cubical contents, outside dimensions, from top of concrete basin to average height of roof = 153 cu. ft.

4¾ cu. yds. of earth excavation	@	.50	2.37	
2 " concrete in basin	@	20.00	40.00	
1—8″ x 18″ iron screen over outlet box	@	.75	.75	
1—frame superstructure	@	30.00	30.00	

(4) Piping in Head House:

Blow-off (Ave. depth 2′ 0″):

4′ 0″—4″ C. I. pipe, H. & S.	@	.50	2.00	
8′ 0″—4″ vitrified tile	@	.25	2.00	
1 —4″ gate valve, set	@	8.65	8.65	
				2,213.57

Carry forward $2,936.51

The Water Supply.—Continued.

700	Brought forward			$2,936.51

(*d*) Spring No. 4.

(1) Land Improvement:

Clearing 2.26 A. of deadwood and brush	@	100.00	$226.00
55 cu. yds. of grading around head houses	@	.50	27.50
118 rods woven wire fence	@	.60	70.80
196 fence posts 8′ long, chestnut	@	.30	58.80

Lower Spring (No. 4 A).

(1) Infiltration Lines:

10′ 0″—6″ vitrified tile in 4′ trench (½ rock)	@	1.00	10.00
325′—4″ vitrified tile in 4′ trench (½ rock)	@	1.00	325.00
75 cu. yds. rock hammered into small bits	@	1.00	75.00

(2) Head House:

Area of floor=21 sq. ft.
Cubic contents, outside dimensions from top of concrete basin to average height of *toof*=126 cu. ft.

4 cu. yds. of earth excavation	@	.50	2.00
1.8 " concrete in basin	@	20.00	36.00
1 8″ x 18″ iron screen over outlet box	@	.75	.75
1 frame superstructure	@	30.00	30.00

(3) Piping in Head House:

Blow-off (Ave. depth 1½ feet):

4′ 0″—4″ C. I. pipe, H. & S.	@	.50	2.00	
5′ 0″—4″ vitrified tile	@	.25	1.25	
1 4″ gate valve, set	@	8.65	8.65	

Upper Spring (No. 4 B).

(1) Infiltration Lines:

10′ 0″—6″ vitrified tile in 4′ trench (⅔ rock)	@	1.50	15.00	
625′—4″ vitrified tile in 4′ trench (⅔ rock)	@	1.50	937.50	
140 cu. yds. rock hammered into small pieces	@	1.00	140.00	
Carry forward			$1,966.25	$2,936.51

Brought forward				$2,936.51
Brought forward			$1,966.25	

(2) Head House:

Area of floor=19 sq. ft.
Cubic contents, outside dimensions from top of concrete basin to average height of roof=113 cu. ft.

3 cu. yds. of earth excavation	@	.50	1.50	
17 " " concrete in basin	@	20.00	34.00	
1 8″ x 17″ iron screen over outlet box	@	.75	.75	
1 strainer over overflow	@	.35	.35	
1 frame superstructure	@	25.00	25.00	

The Water Supply.—Continued.

(3) Piping in Head House:				
Overflow (Ave. depth 2′ 0″):				
48′ 0″—4″ vitrified tile in 2′ trench	@	.25	12.00	
Blow-off (Ave. depth 2′ 0″):				
6′ 0″—4″ C. I. pipe, H. & S.	@	.50	3.00	
6′ 0″—4″ vitrified tile	@@	.25	1.50	
1—4″ gate valve, set	@	8.65	8.65	
				2,053.00
(*e*) Spring No. 5.				
(1) Land Improvements:				
Clearing ½ A. dead timber and brush	@	100.00	50.00	
20 cu. yds. grading at head house	@@	.50	10.00	
36½ rods woven wire fence	@@	.60	21.90	
60 fence posts 8′ long, chestnut	@	.30	18.00	
(2) Infiltration Lines:				
10′ 0″—6″ vitrified tile in 4′ trench (½ rock)	@	1.00	10.00	
175′ 0″—4″ vitrified tile in 4′ trench (½ rock)	@@	1.00	175.00	
41 cu. yds. of rock hammered into small pieces	@	1.00	41.00	
Carry forward			$325.90	$4,989.51

702	Brought forward				$4,989.51
	Brought forward			$325.90	
	(3) Head House:				
	Area of floor=13.5 sq. ft.				
	Cubic contents, outside dimensions from top of concrete basin to average height of roof=82 cu. ft.				
	2.5 cu. yds. of earth excavation	@	$.50	1.25	
	1.4 " " concrete in basin	@	20.00	28.00	
	1 8" x 15" iron screen over outlet box	@	.75	.75	
	1 frame superstructure	@	20.00	20.00	
	(4) Piping in Head House:				
	Blow-Off (Ave. depth 2' 0"):				
	4' 0"—4" C. I. pipe, H. & S.	@	.50	2.00	
	4' 0"—4" vitrified tile	@	.25	1.00	
	1 4" gate valve, set	@	8.65	8.65	
					387.55
	(*f*) Spring No. 6.				
	Clearing 4.91 A. of deadwood and brush	@	100.00	491.00	
	200 cu. yds. of grading	@	.50	100.00	
	158 rods woven wire fence	@	.60	94.80	
	260 fence posts, 8 ft. long, chestnut	@	.30	78.00	

The Water Supply.—Continued.

Upper Spring (No. 6 A):

(1) Infiltration Lines:

Little shooting required although trenches were full of boulders.

327′ 0″—6″ vitrified tile in 5′ trench	@	1.00	327.00	
2203′ 0″—4″ " " " 5′ "	@	1.00	2,203.00	
562 cu. yds. boulders hammered into small pieces	@	1.00	562.00	

(2) Head House:

Area of floor 29 sq. ft.
Cubic contents, outside dimensions from top of concrete basin to average height of roof=200 cu. ft.

Carry forward			$3,855.80	$5,377.06
703 Brought forward				$5,377.06
Brought forward			$3,855.80	
7½ cu. yds. of earth excavation	@	$.50	3.75	
3 " " concrete in basin	@	20.00	60.00	
1—7″ x 20″ iron screen outlet box	@	.75	.75	
1—strainer over overflow	@	.35	.35	
1—frame superstructure	@	40.00	40.00	

(3) Piping in Head House:

Blow-off (Ave. depth 2′ 0″):

4′ 6″—6″ C. I. pipe, H. & S.	@	.65	2.93
30′ 0″—6″ vitrified tile	@	.30	9.00
1—6″ gate valve, set	@	13.60	13.60

Overflow (Ave. depth 1′ 0″):

13′ 0″—6″ vitrified tile	@	.20	2.60

Lower Spring (No. 6 B):

(1) Infiltration Lines:

325′ 0″—6″ vit. tile in 6′ trench	@	.35	113.75
595′ 0″—4″ " " " 4′ "	@	.25	148.75
220 cu. yds. boulders hammered to small pieces	@	1.00	220.00

(2) Head House:

Area of floor = 18 sq. ft.

Cubic contents, outside dimensions, from top of concrete basin to average height of roof = 109 cu. ft.

5 cu. yds. earth exacavation	@	.50	2.50
2.3 " concrete in basin	@	20.00	46.00
1—8″ x 20″ iron screen over outlet	@	.75	.75
1—strainer over overflow	@	.35	.35
1—frame superstructure	@	20.00	20.00

The Water Supply.—Continued.

(3) Piping in Head House:

Overflow:

3′ 0—6″ vitrified tile	@	.15	.45,	
Carry forward			$4,541.33	$5,377.06
704 Brought forward				$5,377.06
Brought forward			$4,541.33	
Blow-off:				
4′ 6″—4″ C. I. pipe, H. & S.	@	$.40	1.80	
20′ 6″—4″ vitrified tile	@	.10	2.05	
1—4″ gate valve, set	@	8.65	8.65	
(4) Concrete Retaining Wall:				
1 cu. yd. concrete in 10″ wall 2′ high	@	16.00	16.00	
20 cu. yds. boulders hammered to small pieces	@	1.00	20.00	
(5) Tool House:				
Of rough oak and poplar and ½ floored. Area of floor = 155 sq. ft. Cubic contents, outside dimensions, from bottom of sills to average height of roof = 1,240 cu. ft.	@	120.00	120.00	4,709.83

(*g*) Spring No. 7 & 8.

Land Improvements:

Clearing 1.5 A of brush and deadwood	@	100.00	150.00	
94 rods woven wire fence	@	.60	56.40	
155 fence posts 8′ long, chestnut	@	.30	46.50	
East Spring (No. 7 A):				
(1) Infiltration Lines:				
20′—4″ vitrified title 4′ deep (rocky)	@	1.00	20.00	
4½ cu. yds. boulders hammered to small pieces	@	1.00	4.50	
Carry forward			$277.40	$10,086.89
705 Brought forward				$10,086.89
Brought forward			$277.40	
(2) Head House:				
Area of floor = 15 sq. ft.				
Cubic contents, outside dimensions, from top of concrete basin to average height of roof = 90 cu. ft.				
2.5 cu. yds. earth excavation	@	$.50	1.25	
1.6 " concrete in basin	@	20.00	32.00	
1—8″ x 14″ iron screen over outlet box	@	1.00	1.00	
1—strainer over overflow	@	.35	.35	
1—frame superstructure	@	20.00	20.00	

The Water Supply.—Continued.

(3) Piping in Head House:

Blow-off (Ave. depth 1½ft.):			
4′ 0″—4″ C. I. pipe, H. & S.	@	.50	2.00
10′ 0″—4″ vitrified tile	@	.25	2.50
1—4″ gate valve, set	@	8.65	8.65
Overflow:			
7′ 6″—4″ vitrified tile	@	.10	.75

Lower Spring (No. 7 B):

(1) Infiltration Lines:

560′ 0″ vitrified tile in 3′ trench (solid rock)	@	1.75	980.00
83 cu. yds. rock hammered to small pieces	@	1.00	83.00

(2) Head House:

Area of floor = 26 sq. ft.
Cubic contents, outside dimensions from top of concrete basin to average height of roof = 155 cu. ft.

Carry forward	$1,408.90	$10,086.89

706	Brought forward			$10,086.89
	Brought forward		$1,408.90	
4.5 cu. yds. earth excavation	@	$.50	2.25	
2.2 " concrete in basin	@	20.00	44.00	
1—6" x 14" iron screen over outlet box	@	.75	.75	
1—strainer over overflow	@	.35	.35	
1—frame superstructure	@	30.00	30.00	
(3) Piping in Head House:				
Blow-off (Ave. cut 1½ feet):				
4' 0"—4" C. I. pipe, H. & S.	@	.50	2.00	
25' 0"—4" vitrified tile	@	.25	6.25	
1—4" gate valve, set	@	8.65	8.65	
Overflow:				
15' 0"—4" vitrified tile	@	.25	3.75	
West Spring (No. 7 C):				
(1) Infiltration Lines:				
250' 0"—4" vitrified tile in 4' trench (½ solid rock)	@	1.00	250.00	
55 cu. yds. rock hammered into small pieces	@	1.00	55.00	

The Water Supply.—Continued.

(2) Head House:

Area of floor = 15 sq. ft.
Cubic contents, outside dimensions, from top of concrete basin to average height of roof = 89 cu. ft.

3.3 cu. yds. earth excavation	@	.50	1.65	
1.7 " concrete in basin	@	20.00	34.00	
1—10" x 15" iron screen over outlet	@	.75	.75	
1—strainer over overflow	@	.35	.35	
1—frame superstructure	@	20.00	20.00	
Carry forward			$1,868.65	$10,086.89
707 Brought forward				$10,086.89
Brought forward			$1,868.65	

(3) Piping in Head House:

Blow-off (Ave. Depth 2 feet):

45' 6"—4" C. I. pipe, H. & S.	@	.50	22.75	
1—4" gate valve, set	@	8.65	8.65	
Overflow:				
11' 6"—4" vitrified tile	@	.10	1.15	
				1,901.20

(1) Land Improvements: (*h*) Spring No. 9.				
Clearing 1.17 A. of brush and deadwood	@	100.00	117.00	
88 rods of woven wire fence	@	.60	52.80	
145 posts 8′ long, chestnut	@	.30	43.50	
(2) Infiltration Lines:				
750′ 0″—4″ vitrified tile in 4′ trench (solid rock)	@	2.25	1,687.50	
167 cu. yds. rock hammered to small pieces	@	1.00	167.00	
(3) Head house:				
Area of floor = 21 sq. ft.				
Cubic contents, outside dimensions from top of concrete basin to average height of roof = 21 sq. ft.				
5 cu. yds. rock excavation	@	4.50	22.50	
2.6 cu. yds. of concrete in basin	@	20.00	52.00	
1—8″ x 20″ iron screen over outlet	@	.75	.75	
1—strainer	@	.35	.35	
1—frame superstructure	@	25.00	25.00	
				2,168.40
Carry forward				$14,156.49
Brought forward				$14,156.49
(*i*) Spring No. 10.				
(1) Land Improvements:				
Clearing 0.3 A. of brush and deadwood	@	100.00	$30.00	
28 rods woven wire fence	@	.60	16.80	
46 fence posts, 8′ long, chestnut	@	.30	13.80	

The Water Supply.—Continued.

(2) Infiltration Lines:				
30′ 0″—4″ vitrified tile in 3′ trench (½ rock)	@	1.00	30.00	
25′ 0″—4″ " " " 4′ " (earth)	@	.30	7.50	
50′ 0″—4″ " " " 4′ " (rock)	@	2.25	112.50	
19 cu. yds. of rock hammered to small pieces	@	1.00	19.00	
(3) Head House:				
Area of floor = 21 sq. ft.				
Cubic contents, outside dimensions from top of concrete basin to average height of roof = 127 cu. ft.				
5 cu. yds. of earth excavation	@	.50	2.50	
2.6 " concrete in basin	@	20.00	52.00	
1—10″ x 16″ iron screen over outlet box	@	.75	.75	
1—strainer	@	.35	.35	
1—frame superstructure	@	25.00	25.00	
(4) Piping in Head House:				
Blow-off (Ave. depth 2′ 0″):				
5′ 0″—4″ C. I. pipe, H. & S.	@	.50	2.50	
35′ 0″—4″ vitrified tile	@	.25	8.75	
1—4″ gate valve, set	@	8.65	8.65	
Overflow:				
19′ 0″—6″ vitrified tile	@	.20	3.80	
				333.90
Carry forward				$14,490.38

Brought forward			$14,490.38

(j) Spring No. 11.

(1) Land Improvements:

Clearing 0.35 A. of brush & deadwood	@	100.00	$35.00
40½ rods of woven wire fence	@	.60	24.30
67 fence posts, 8′ long, chestnut	@	.30	20.10

(2) Infiltration Lines:

10′ 0″—4″ vitrified tile in 4′ trench (earth)	@	.30	3.00
2 cu. yds. of rock hammered to small pieces	@	1.00	2.00

(3) Head House:

Area of floor = 13½ sq. ft.
Cubic contents, outside dimensions, from top of concrete basin to average height of roof = 72 cu. ft.

4 cu. yds. earth excavation	@	.50	2.00
1.7 " concrete in basin	@	20.00	34.00
1—6″ x 13″ iron screen over outlet box	@	.75	.75
1—frame superstructure	@	15.00	15.00

(4) Piping in Head House:

Blow-off (Ave. depth 2′ 0″):

13′ 6″—4″ C. I. pipe, H. & S.	@	.50	6.75
1—4″ gate valve, set	@	8.65	8.65

The Water Supply.—Continued.

Overflow:				
7′ 0″—4″ C. I. pipe, H. & S.	@	.40	2.80	154.35
Total Item No. 3				$14,644.73
Depreciation:				
Ave. age 7 yrs. Ave. life 50 yrs. Int. rate 4%. Annual Depreciation @ .63% = $92.26				
Accrued Depreciation @ 5.18%				758.60
Net physical value				$13,886.13
Present Worth of Water Rights in Connection with above group of springs				$40,000.00

710

Item No. 4. The Ada Springs.

(*a*) Spring No. 12.

(1) Land Improvements:			
Clearing 0.354 A. of brush & deadwood	@	100.00	$35.40
33 rods woven wire fence	@	.60	19.80
54 fence posts 8′ long, chestnut	@	.30	16.20
300 cu. yds. grading	@	.50	150.00
(2) Infiltration Lines:			
130′ 0″—4″ tile in 10′ trench (½ large rock)	@	1.00	130.00
85′ 0″—4″ tile in 6′ trench (½ large rock)	@	.60	51.00
153′ 0″—4″ tile in 6′ trench (½ large rock)	@	.60	91.80
82 cu. yds. stone hammered to small pieces	@	1.00	82.00

(3) Head House:

Area of floor = 23 sq. ft.
Cubic contents, outside dimensions, from top of concrete basin to average height of roof = 144 cu. ft.

8 cu. yds. of earth excavation	@	.50	4.00	
3.2 " " concrete in basin	@	20.00	64.00	
1 6" x 20" iron strainer over outlet box	@	.75	.75	
1 frame superstructure	@	30.00	30.00	

(4) Piping in Head House:

Blow-off (Ave. depth 2 feet):

4' 6"—6" C. I. pipe, H. & S.	@	.65	2.93	
8' 0"—6" vitrified tile	@	.30	2.40	
1—6" gate valve, set	@	13.60	13.60	

Overflow:

12' 0"—4" vitrified tile	@	.10	1.20	
				$695.08
Carry forward				$695.08
711 Brought forward				$695.08

The Water Supply.—Continued.

(*b*) Spring No. 13.

(1) Land Improvements:

Clearing 0.372 A. of brush & deadwood	@	100.00	$37.20
31½ rods woven wire fence	@	.60	18.90
52 fence posts 8′ long, chestnut	@	.30	15.60
600 cu. yds. grading (leveling up)	@	.40	240.00
45 " " excavation in 300′ ditch	@	.50	22.50

(2) Infiltration Lines:

200′ 0″—4″ tile in 5′ trench (loose rock and earth)	@	.35	70.00
45 cu. yds. stone hammered into small pieces	@	1.00	45.00

(3) Head House:

Area of floor = 23 sq. ft.

Cubic contents, outside dimensions from top of concrete basin to average height of roof = 150 cu. ft.

6.5 cu. yds. earth excavation	@	.50	3.25
3.3 " " concrete in basin	@	20.00	66.00
1—5″ x 20″ iron screen over outlet box	@	.75	.75
1—frame superstructure	@	30.00	30.00

(4) Piping in Head House:

Blow-off:

3′ 6″—4″ C. I. pipe, H. & S.	@	.40	1.40
30′ 0″—4″ vitrified tile	@	.10	3.00
1—4″ gate valve, set	@	8.65	8.65

	Overflow:				
	7′ 0″—4″ vitrified tile	@	.10	.70	
	Carry forward				562.95
					$1,258.03
712	Brought forward				$1,258.03
	(*c*) Spring No. 14.				
	(1) Land Improvements:				
	Clearing 0.509 A. of brush & deadwood	@	100.00	50.90	
	65 rods woven wire fence	@	.60	39.00	
	110 fence posts, 8′ long, chestnut	@	.30	33.00	
	1,500 cu. yds. grading around head house	@	.40	600.00	
	600 " " " at road	@	.40	240.00	
	(2) Infiltration Lines:				
	93′ 0″—4″vitrified tile, 5′ trench (earth and boulders)	@	.60	55.80	
	95′ 0″—4″ vitrified tile, 5′ trench (rock)	@	2.25	213.75	
	330′ 0″—3″ C. I. pipe, H. & S.	@	.40	132.00	
	42 cu. yds. stone hammered to small pieces	@	1.00	42.00	
	(3) Head House:				
	Area of floor = 25 sq. ft.				
	Cubic contents, outside dimensions, from top of concrete basin to average height of roof = 176 cu. ft.				
	11 cu. yds. excavation (earth)	@	.50	5.50	
	3½ " concrete in basin	@	20.00	70.00	
	1—5″ x 20″ iron screen over outlet box	@	.75	.75	
	1—frame superstructure	@	35.00	35.00	

The Water Supply.—Continued.

(4) Piping in Head House:

Blow-off (Ave. depth 2 ft.):

9′ 0″—4″ C. I. pipe, H. & S.	@	.50	4.50	
1—4″ gate valve, set	@	8.65	8.65	
Overflow:				
9′0″—4″ vitrified tile	@	.10	.90	1,531.75
Carry forward				$2,789.78
713 Brought forward				$2,789.78

(*d*) Spring No. 15.

24 rods woven wire fence	@	$.60	$14.40	
40 fence posts 8′ long, locust	@	.50	20.00	
85 cu. yds. excavation in 380 lin. ft. of ditch	@	.50	42.50	76.90

(*e*) Spring No. 16.

(1) Land Improvements:

Clearing 1.058 A. of brush & deadwood	@	100.00	105.80	
53½ rods woven wire fence	@	.60	32.10	
88 fence posts 8′ long, chestnut	@	.30	26.40	
20 cu. yds. grading	@	.50	10.00	

(2) Infiltration Lines:

525′ 0″—4″ tile 4′ trench (1/3 rock)	@	.75	393.75	
117 cu. yds. rock hammered to small pieces	@	1.00	117.00	

(3) Head House:

Area of floor = 9 sq. ft.
Cubic contents, outside dimensions, from bottom of foundation to average height of roof = 143 cu. ft.

4 cu. yds. of earth excavation	@	.50	2.00	
2.9 cu. yds. " concrete in basin and walls	@	20.00	58.00	
0.3 " " of reinforced concrete roof slab 4″ thick	@	20.00	6.00	
150 lbs. ¾″ rods	@	.03	4.50	
1 iron door and frame, weight approximately 90 lbs.	@	.04	3.60	
1—5½″ x 14″ iron screen over outlet box	@	.75	.75	
1 hasp and padlock	@	1.00	1.00	

(4) Piping in Head House:

Blow-off:

11′ 6″—4″ C. I. pipe, H. & S.	@	.40	4.60	
1—4″ gate valve, set	@	8.65	8.65	

Overflow:

2′ 0″—4″ vitrified tile	@	.10	.20	
				774.35
Carry forward				$3,641.03

The Water Supply.—Continued.

714	Brought forward			$3,641.03

(*f*) Spring No. 17.

(1) Land Improvements:

Clearing 1.99 A. of brush & deadwood	@	100.00	$199.00
99 rods woven wire fence	@@	.60	59.40
165 fence posts 8′ long, chestnut	@@	.30	49.50
30 cu. yds. of grading	@	.50	15.00

(2) Infiltration Lines:

440′ 0″—4″ vitrified tile in 4′ trench (loose rock)	@	.50	220.00
180′ 0″—4″ C. I. pipe, H. & S. in 4′ trench (loose rock)	@@	.80	144.00
98 cu. yds. rock hammered into small pieces	@	1.00	98.00

(3) Head House:

Area of floor = 8½ sq. ft.
Cubic contents, outside dimensions from bottom of foundation to average height of roof = 147 cu. ft.

4 cu. yds. of earth excavation	@	.50	2.00
2.9 " " " concrete in basin and walls	@@	20.00	58.00
0.5 " " " concrete in reinforced roof slab	@@	20.00	10.00
180 lbs. ¾″ round rods	@@	.03	5.40
1 iron door and frame, approximate weight 90 lbs.	@@	.04	3.60
1—5″ x 18″ iron screen on outlet box	@@	.75	.75
1 Hasp and padlock	@	1.00	1.00

(4) Piping in Head House:

Blow-off (Ave. depth 2 feet):

17′ 0″—4″ C. I. pipe, H. & S.	@	.50	8.50	
1—4″ gate valve, set	@	8.65	8.65	
Overflow:				
4′ 0″—4″ vitrified tile	@	.10	.40	
				883.20
Carry forward				$4,524.23
715 Brought forward				$4,524.23

(*g*) Spring No. 18.

Land Improvements:

Clearing 15 A. of brush & dead wood	@	100.00	$1,500.00
255 rods woven wire fence	@	.60	153.00
420 fence posts 8′ long, chestnut	@	.30	126.00
900 cu. yds. grading	@	.40	360.00

East Spring (No. 18 A).

(1) Infiltration Lines:

125′ 0″—4″ vitrified tile, 5′ trench (rock)	@	2.25	281.25
28 cu. yds. rock hammered into small pieces	@	1.00	28.00

The Water Supply.—Continued.

(2) Head House:

Area of floor 8 sq. ft.
Cubic contents, outside dimensions from bottom of foundation to average height of roof = 131 cu. ft.

2½ cu. yds. earth excavation	@	.50	1.25	
3 " " concrete in basin & walls	@	20.00	60.00	
½ " " " " reinforced roof slab	@	20.00	10.00	
140 lbs. ¾" round rods	@	.03	4.20	
1 iron door and frame, approximate weight = 80 lbs.	@	.04	3.20	
1—6½" x 21" iron screen over outlet box	@	.75	.75	
1—hasp and padlock	@	1.00	1.00	

(3) Piping in Head House:

Blow-off:

12' 0"—4" C. I. Pipe, H. & S.	@	.40	4.80	
1—4" gate valve, set	@	8.65	8.65	

Overflow:

9' 0"—6" C. I. pipe, H. & S.	@	.60	5.40	
Carry forward			$2,547.50	$4,524.23
716 Brought forward				$4,524.23

(*g*) West Spring (No. 18 B).

Brought forward			$2,547.50
(1) Infiltration Lines:			
71′ 0″—4″ vitrified tile pipe in 5′ trench (rock)	@	$2.25	159.75
53′ 0″—4″ vitrified tile pipe in 6′ trench (½ rock)	@	1.50	79.50
200′ 0″—4″ vitrified tile pipe in 10′ trench (¾ rock)	@	3.75	750.00
200′ 0″—4″ vitrified tile pipe double line in 100′ of trench 6′ deep (loose rock)	@	1.00	200.00
1,300′ 0″—4″ vitrified tile pipe in 5′ trench (½ rock)	@	1.30	1,690.00
385 cu. yds. rock hammered into small pieces	@	1.00	385.00
(2) Head House:			
Area of floor = 34 sq. ft.			
Cubic contents, outside dimensions, from bottom of foundation to average height of roof = 485 cu. ft.			
7 cu. yds. earth excavation	@	.50	3.50
6.5 " concrete in basin and walls	@	20.00	130.00
1.1 " reinforced concrete in roof slab	@	20.00	22.00
400 lbs. ¾″ round rods	@	.03	12.00
1 iron door and frame—approximate weight = 160 lbs.	@	.04	6.40
1—7″ x 33″ iron screen over outlet box	@	1.35	1.35
1 hasp and padlock	@	1.00	1.00

The Water Supply.—Continued.

(3) Piping in Head House.

Blow-off:				
5′ 0″—8″ C. I. pipe, H. & S.	@	.90	4.50	
17′ 6″—8″ vitrified tile pipe	@	.20	3.50	
18″ gate valve, set	@	20.90	20.90	
Overflow:				
9′ 6″—6″ C. I. pipe, H. & S.	@	.60	5.70	
				6,022.60
Carry forward				$10,546.83
717 Brought forward				$10,546.83

(*h*) Spring No. 20.

4½ cu.yds. earth excavation	@	$.50	$2.25	
2.4 " concrete in basin	@	20.00	48.00	
1 iron screen 8″ x 16″ over outlet box	@	.75	.75	
40′ 0″—4″ vitrified tile in 4′ trench (earth)	@	.40	16.00	
				67.00

(*i*) Spring No. 21. Ada Spring.

(1) Fencing:

30 rods woven wire fence	@	.60	18.00	
63 fence posts 8′ long, chestnut	@	.30	18.90	
Setting 63 fence posts	@	.25	15.75	

(2) Basin:

163 cu. yds.	earth excavation	@	.40	65.20
163 "	excavation (rock—large boulders)	@	2.00	326.00
870 "	" (shale) on hillside	@	1.50	1,305.00
500 "	" (stone) " "	@	3.00	1,500.00
44½ "	concrete in retaining wall and aprons	@	15.00	667.50
1,630 "	stone hammered to small pcs	@	1.00	1,630.00
326 "	excavated shale, replaced	@	.30	97.80
326 "	earth replaced	@	.20	65.20
8,800 sq. ft.	sod	@	.02	176.00
4' 0"—10"	C. I. pipe	@	1.25	5.00
12' 0"—12"	vitrified tile	@	.40	4.80

(3) Outlet Box from Basin:

3.8 cu. yds.	concrete in walls and bottom	@	20.00	76.00
44 lbs.	½" round rods 4' 8" long, 14 in number	@	.03	1.32
31½ sq. ft.	screen 4' 6" x 7' 0"—¼" mesh	@	.10	3.15
50 bd. ft.	2" oak in cover	@	55.00	2.75
28 lin. ft.	2" quarter round pine	@	.06	1.68
2	strap hinges	@	.16	.32
1	hasp and padlock	@	1.00	1.00
	Carry forward			$5,981.37 $10,613.83

The Water Supply.—Continued.

718	Brought forward				$10,613.83
	Brought forward			$5,981.37	
	(4) Spring House:				
37	cu. yds. excavation	@	$.50	18.50	
46	" concrete	@	15.00	690.00	
64	lin. ft. 2" W. I. pipe in posts	@	.25	16.00	
64	" " 1½" " " " "	@	.18	11.52	
88	lbs. C. I. in 8 column plates	@	.04	3.52	
320	" ¾" round rods in uprights	@	.03	9.60	
16	—⅝" round rods 8 ft. long with rings at ends and turnbuckles, approximate weight = 140 lbs	@	.03	4.80	
8	—clevises	@	.15	1.20	
56	lin. ft. woven wire net 56" high made of ⅛" round wire with 1" mesh and ¼" round rods at edge	@	1.25	70.00	
1	door and frame 19" x 20" made of 1" x 3/16" iron riveted and welded with door panel of wire net	@	2.00	2.00	
2	—12" x 27" iron strainers over outlet box	@	1.75	3.50	
1	—padlock	@	1.00	1.00	
600	bd. ft. pine lumber in roof framing d4s	@	50.00	30.00	
300	" " 1" sheathing on roof	@	50.00	15.00	
230	" " beaded pine ceiling laid in octagon	@	55.00	12.65	
70	lin. ft. 3" x 1" moulding	@	.06	4.20	
	" " 2" moulding	@	.05	3.75	
11	sy. yds. shingles-dipped and painted	@	1.00	11.00	
	All wood and metal above the concrete basin painted 2 coats	@	10.00	10.00	

	(5) Piping at Spring House:				
	Basin to Spring House:				
	16′ 0″—18″ vitrified tile 4′ trench	@	1.25	20.00	
	In Spring House:				
	27′ 0″—18″ vitrified tile	@	.75	20.25	
	1—18″ vitrified tile tee	@	2.00	2.00	
	Caps over 12″ Pipes:				
	2 circular covers, 24″ diameter, made of 2 layers 1″ boards with an iron ring 24″ in outside diameters. Ring of 2″ x ⅜″ iron with 12½″ holes. Each cover held by 12⅜″ x 12″ bolts imbedded in concrete walls of basin	@	2.50	5.00	
	Carry forward			$6,946.86	$10,613.83
719	Brought forward				$10,613.83
	Brought forward			6,946.86	
	(6) Miscellaneous:				
	181 lin. ft. rought stone wall 4′ high no mortar	@	$.35	63.35	
	220 cu. yds. excavation in ditches	@	.50	110.00	
	150′—2″ W. I. pipe	@	.15	22.50	
	43′—¾″ "	@	.05	2.15	
	17′—¼″ "	@	.03	.51	
	1—bibb cock	@	.50	.50	
	1—2″ x 1″ reducer	@	.25	.25	
	1—1″ globe valve	@	1.50	1.50	
	13—evergreen trees set out	@	5.00	65.00	
	100—poplar trees, set out	@	5.00	500.00	
					7,712.62

The Water Supply.—Continued.

(*j*) Spring No. 22.

(1) Land Improvements:

450 cu. yds. grading	@	.40	180.00	
600 " excavation in new river bed	@	.75	450.00	
100 lin. ft. of loose stone wall 3′ high	@	.30	30.00	
(2) Infiltration Lines:				
8 cu. yds. concrete cut-off wall 4′ high x 1′ 0″ thick	@	15.00	120.00	
2′ 0″—8″ vitrified tile	@	.20	.40	
(3) Head House:				
Area of floor = 33 sq. ft.				
Cubic contents, outside dimensions, from top of concrete basin to average height of roof = 232 cu. ft.				
7 cu. yds. of earth excavation	@	.50	3.50	
3.2 " concrete in basin	@	20.00	64.00	
1—5″ x 25″ iron screen over outlet box	@	.75	.75	
1—frame superstructure	@	45.00	45.00	
Carry forward			$893.65	$18,326.45

720	Brought forward				$18,326.45
	Brought forward			$893.65	
	(4) Piping in Head House:				
	Blow-off:				
4′ 0″—8″ C. I. pipe, H. & S.		@	$.90	3.60	
10′ 10″—8″ vitrified tile		@	.20	2.00	
	Overflow:				
38′ 0″—6″ vitrified tile		@	.15	5.70	
					904.95
	Total Item No. 4				$19,231.40
	Depreciation:				
	Ave. age, 5 yrs. Ave. life, 50 yrs. Int. rate, 4%.				
	Annual Depreciation @ .63% = $121.16				
Accrued Depreciation @ 3.5%					673.10
	Net physical value				$18,558.30
Present worth of water rights in connection with above group of Springs					$6,683.00

Item No. 5. Jarrell Spring, Spring No. 19.

This spring is located on an uncleared and unfenced tract of land, one acre in extent. No development has been made.

The Water Supply.—Continued.

Item No. 6. Beaver Pond Spring. Spring No. 23.

(1) Land Improvements:				
47 rods woven wire fence	@	$.60	$28.20	
94 fence posts 8′ long, chestnut	@	.30	28.20	
300 bd. ft. lumber in 150′—3 board fence	@	40.00	12.00	
230 lin. ft. rip rap stone wall 3′ high	@	.30	69.00	
				$137.40
Total Item No. 6				$137.40
Depreciation:				
Ave. age, 16 yrs. Ave. life, 25 yrs. Int. rate, 4%.				
Annual Depreciation @ 2.31% = $3.17.				
Accrued Depreciation @52.4%				72.00
Net physical value				$65.40
Present worth of water rights in connection with above spring				$2,317.00

721

Item No. 8.—Pipe Line from Gravity Springs to City.

(*a*) Cast Iron Pipe.

12,133 lin. ft. 8″ C. I. Pipe, Class "B."			
10,336 " " 4″ " " " "			
3,652 " " 3″ " " " "			
Weight of above pipe = 343.8 tons	@	$26.50	$9,110.70

Cast Iron Specials on Above Pipe:

1—6″ x 6″ x 6″ tee.
6—6″ x 6″ x 6″ "Y" branches.
7—4″ x 4″ x 4″ " "
4—6″ x 4″ reducers.
6—4″ x 3″ "
2—6″ sleeves.
11—4″ "
8—3″ "

Weight of above specials = 3,787#	@	.03¼	123.00	
Valves:				
4—6″ double gate valves, set	@	13.60	54.40	
13—4″ " " " "	@	8.65	112.45	
4—4″ check valves, set	@	10.50	42.00	
				$9,442.63

(*b*) Laying the Pipe Lines.

Ordinary trenching including excavation, laying, yarn, lead and backfill. All pipe having 2 ft. cover.

The excavation was made difficult and expensive by the presence of a great many boulders and thin rock ledges, as well as the distance from town at which some of the work was carried on.

12,133 lin. ft. of 6″ pipe	@	$.45	$5,459.85	
10,336 " " " 4″ "	@	.40	4,134.40	
3,652 " " " 3″ "	@	.35	1,278.30	
				10,872.45

The Water Supply.—Continued.

(c) Extra for Unusual Excavation.

Solid Rock Trenches:

The trenches lie through solid limestone which is very hard and brittle making drilling and blasting expensive. The strata lie in an almost vertical plane.

Carry forward				$20,315.08
722 Brought forward				$20,315.08
708 cu. yds. rock excavation	@	$2.50	$1,770.00	

Shale Trenches:

The shale is extremely tough and lying in a nearly vertical plane, it is impossible to blast, while picking is very slow work.

1,530 lin. ft. shale trench	@	.25	382.50	2,152.50
Total Item No. 8				$22,467.58

Depreciation:

Ave. age 7 yrs. Ave. life 75 yrs. Int. rate 4%. Annual Depreciation @ .214% = $48.08. Accrued Depreciation @ 1.76%	395.43
Net physical value	$22,072.15

Item No. 9. Pipe Line from Ada Springs to City

(a) Cast Iron Pipe.

21,570 lin. ft. of 10" C. I. pipe.
9,401 " " " 8" " "
2,843 " " " 6" " "
2,055 " " " 4" " "
7,094 " " " 3" " "

[redacted]

Weight of above pipe = 1,150.4 tons..... @ $26.50 $30,485.60

Cast Iron Specials:

1 10" x 10" x 10" "Y" branch.
2 10" x 10" x 6" " "
2 8" x 8" x 8" " "
3 8" x 8" x 6" " "
1 8" x 8" x 4" " "
1 6" x 6" x 6" " "
2 4" x 4" x 4" " "

Carry forward $30,485.60

723 *The Water Supply.*—Continued.

Brought forward			$30,485.60	
5 10″ x 10″ x 6″ tees.				
1 6″ x 6″ x 6″ tee.				
2 4″ x 4″ x 4″ "				
2 10″ 90° bends.				
5 10″ 45° "				
3 6″ " "				
2 4″ " "				
9 3″ " "				
1 10″ 22½° "				
74 3″ sleeves.				
8 4″ "				
3 6″ "				
4 8″ "				
2 10″ "				
1 10″ x 8″ reducer.				
7 6″ x 4″ "				
6 4″ x 3″ "				
Weight of above specials = 13,334#	@	$.03½	466.69	
Valves:				
8 4″ double gate valves, set	@	9.15	73.20	
9 6″ " " " "	@	14.60	131.40	
1 8″ " " " "	@	21.40	21.40	
1 10″ " " " "	@	28.20	28.20	
1 6″ horizontal check valve, set	@	16.60	16.60	
2 10″ " " " "	@	37.40	74.80	
				$31,297.89

(*b*) Laying Pipe Line.

Ordinary trenching including excavation, laying, lead, yarn and backfill, all pipe having 2 ft. of cover.

21,570 lin. ft. 10″ pipe	@	.35	$7,549.50		
9,401 " " 8″ "	@	.30	2,820.30		
2,943 " " 6″ "	@	.25	735.75		
2,055 " " 4″ "	@	.22	452.10		
7,094 " " 3″ "	@	.20	1,418.80		
				12,976.45	
Carry forward					$44,274.34
724 Brought forward					$44,274.34

(*c*) Extra for Unusual Excavation.

Rock Trenches:

These trenches lie through solid limestone ledges which have been turned so that their stratification lines lie almost vertically.

3,065 cu. yds. rock excavation	@	$2.50	$7,662.50	

Shale Trenches:

The shale encountered was very difficult to excavate owing to its lying in vertical planes and having to be picked out. Most of the shale trenches were more or less wet.

4,200 lin. ft. shale trenches	@	.25	1,050.00	

The Water Supply.—Continued.

Wet Trenches:				
Constant pumping or bailing required.				
6,400 lin. ft. wet trenches	@	.15	960.00	
Steep Hillside Trenches:				
700 lin. ft. trench	@	.20	140.00	
(*d*) Miscellaneous Crossings.				
6 stream crossings—river averages 10 ft. wide x 1½ ft. deep; 3 of these crossings are in rock and 1 in hard blue shale	@	25.00	150.00	
River and Railroad Crossings:				
Where the pipe passes through the railroad fill, it lies along with the river in a masonry culvert 25 feet in width and 100 ft. long. The excavation is through solid rock. Small shots had to be used, in order to prevent damage being done to the culvert, while the water of the river was a serious item to contend with.				
2 of the above crossings	@	125.00	250.00	
				10,212.50
Carry forward—Total of Item No. 9				$54,486.84

Brought forward—Total Item No. 9				$54,486.84
Depreciation:				
Ave. age 7 yrs. Ave. life 75 yrs. Int. rate 4%. Annual Depreciation @ .214%=$116.60.				
Accrued Depreciation @ 1.76%				958.97
Net physical value				$53,527.87

Item No. 10. Pipe Line from Beaver Pond to City.

(*a*) Cast Iron Pipe.

3,440 lin. ft. of 10" C. I. pipe, weighing 99.7 tons	@	$25.90	$2,582.23	

(*b*) Laying the Pipe Line.

Ordinary trenching including excavation, laying, yarn, lead and backfill. All pipe under 2 ft. of cover. This pipe line lies through fields which are accessible with teams and light loads.

3,440 lin. ft. of 10" C. I. pipe	@	.35	1,204.00	

(*c*) Extra for Unusual Excavation.

Solid Rock:

Two ledges of solid limestone were encountered which were extremely hard.

155 cu. yds. rock excavation	@	2.50	387.50	
				4,173.73
Total Item No. 10				$4,173.73

The Water Supply.—Continued.

Depreciation:

Ave. age 23 yrs. Ave. life 75 yrs. Int. rate 4%.
Annual Depreciation @ .214%=$8.93.

Accrued Depreciation @ 8.2%	342.25
Net physical value	$3,831.48

725½ *The Pumping Stations.*

726 Item No. 11. The Ada Station Building.

(*a*) The Building.

Cubical contents, outside dimensions from average bottom of footings to average height of roof = 223,000 cu. ft.

(1) Excavation:

Rock on ledge included in station ground improvements.

331 cu. yds. of excavation requiring bracing	@	$.75	$248.25	$248.25

(2) Foundations to Floor Line:

264 cu. yds. concrete	@	8.50	2,244.00	2,244.00

(3) Walls:

76 cu. yds. concrete in walls (2′ thick)	@	8.50	646.00	
2,900 common brick (red) set in Portland cement mortar	@	17.00	49.30	
4,138 sq. ft. of 15″ cement block wall, openings included	@	.41	1,696.58	
4,544 sq. ft. of 20″ cement block wall, openings included	@	.50	2,272.00	
112 sq. ft. 10″ cement block wall, openings included	@	.29	32.48	
130 iron wall stays, 2½″ x ¼″ x 10″	@	.25	32.50	
				4,728.86

(4) Structural Steel in Roof Trusses:

5 Pratt trusses, 51′ 5″ span, 13′ 0″ high with ventilator and lateral bracing, weighing 52,000 lbs.	@	.06	3,120.00	3,120.00

(5) Lumber in Roof and Ventilator:

2,967 bd. ft. poplar joists, purlins and framing	@	40.00	118.68	
14,750 " No. 1 common dressed poplar in sheathing	@	45.00	663.75	
1,243 " No. 1 poplar, dressed, in ventilator	@	45.00	55.93	
1,430 " 3″ x 6″ No. 1 poplar in Jack rafters	@	40.00	57.20	
1,120 " 2½″ x 3″ poplar moulding	@	.07	78.40	
				973.96
Carry forward				$11,315.07

The Water Supply.—Continued.

727	Brought forward				$11,315.07
	(6) Roofing and Gutters:				
6,420 sq. ft. 6½″ x 13″ x ½″ flat tile roofing with copper nails		@	$18.00	$1,155.60	
113 lin. ft. fancy tile ridge roll		@	.40	45.20	
1,050 sq. ft. galv. iron gutter and flashing		@	.12	126.00	
320 bd. ft. No. 1 poplar in gutter		@	45.00	14.40	
					1,341.20
	(7) Downspouts:				
154 lin. ft. 4″ corrugated downspouts		@	.20	30.80	
20 90° bends		@	.30	6.00	
					36.80
	(8) Painting:				
All exterior wood and metal work painted two coats		@	40.00	40.00	40.00
	(*b*) Engine Room.				
Area of floor = 2,940 sq. ft.					
	(1) Floor:				
2,000 sq. ft. of 8″ concrete floor laid on 18″ of cinders, 1½″ top cost of 1:2 Portland cement and sand, 6½″ base of Portland cement, sand and stone		@	.25	500.00	500.00

(2) Interior Trim:

Oak wainscoting 6′ 0″ high, 216 lin. ft. containing:

1,950 bd. ft. dressed oak lumber	@	50.00	97.50	
216 lin. ft. 1″ x 5″ cap with 1 edge rounded	@	.05	10.80	
216 lin. ft. 2″ x 2″ moulding	@	.05	10.80	
				119.10

(3) Doors and Windows:

Window sashes and outside of frames white pine, inside of frame oak. Doors, oak inside finish, frame white pine.

Carry forward				$13,352.17
728 Brought forward				$13,352.17
1 pair outside sliding doors, 10′ x 14′ with 20—10″ x 15″ lights, 1¾″ sash in top of each piece door, one piece door hung with hinges 2′ 10″ x 5′ 2″. This pair of doors shows segmental top outside (rad. 10′ 0″) and square inside and is hung	@	$70.00	$70.00	
1 inside door and frame 3′ 4″ x 10′ 0″ to segment (rad. 3′ 4″) with 10″ x 15″—6 light pivot transom—size of door 3′ 0″ x 6′ 6″	@	25.00	25.00	
1 inside door and frame 3′ 4″ x 7′ 4″ to segment (rad. 3′ 4″)	@	20.00	20.00	
4 twin windows, frames, weights and cords for 15″ wall. Top sashes segmental (radius 6′ 9″). Opening 6′ 9″ x 10′ 0″. Four sashes of 12—10″ x 15″ lights each	@	40.00	160.00	
2 twin windows, frames, weights and cords for 20″ wall. Top sashes segmental (radius 6′ 9″). Opening 6′ 9″ x 10′ 0″. Four sashes of 12—10″ x 15″ lights each	@	40.00	80.00	

The Water Supply.—Continued.

1 twin window, frame, weights and cords for 20″ wall. Opening 5′ 4″ x 6′ 9″. Two sashes rabbetted to pivots—segmental top (radius 6′ 9″) with 12—10″ x 15″ lights each	@	25.00	25.00	
1 single window and frame—fixed for 20″ wall. Opening 5′ 4″ x 4′ 1″. Segmental top (rad. 4′ 1″). One sash with 16—10″ x 15″ lights	@	15.00	15.00	395.00
Carry forward				$13,747.17
729 Brought forward				$13,747.17

(4) Painting and Varnishing:

Inside walls painted two coats white and the joints between the blocks outlined in red. Roof truss and underside of sheeting painted two coats graphite paint.

5,100 sq. ft. wall painted two coats	@	$.03	153.00	
3,700 " roof sheathing painted two coats	@	.02	74.00	
Woodwork filled and varnished with two coats varnish	@	30.00	30.00	257.00

(*c*) Boiler Room.

Area of floor = 1,310 sq. ft.

(1) Floor:

750 sq. ft. of 8″ concrete floor laid on 18″ of cinder, 1½″ top coat of 1:2 Portland cement and sand, 6½″ base of 1:3:5 Portland cement, sand, and stone	@	.25	187.50	187.50

	(2) Doors and Windows:				
1	pair outside sliding doors 10′ x 14′ with 20 10″ x 15″ lights, 1¾″ sashes in the top of each piece door. One door has wicket door hung with hinges 2′ 10″ x 5′ 2″. This pair of doors shows segmental top outside (rad. 10′ 0″) and square inside, and is hung on McCabe door hinges	@	70.00	70.00	
3	twin windows; frames, weights and cords for 15″ wall. Top sashes segmental (rad. 6′ 9″). Opening 6′ 9″ x 10′ 0″. Four sashes of 12 10″ x 15″ lights each	@	40.00	120.00	120.00
	Carry forward			$190.00	$14,191.67
730	Brought forward				$14,191.67
	Brought forward			$190.00	
1	twin window; frame weights and cords for 20″ wall. Top sashes segmental (rad. 6′ 9″). Opening 6′ 9″ x 10′ 0″. Four sashes of 12 10″ x 15″ lights	@	$40.00	40.00	
3	twin windows and frames for 20″ wall. 2 sashes rabbetted to pivots. Segmental top (rad. 6′ 9″), with 12 10″ x 15″ light sashes. Opening 5′ 4″ x 6′ 9″	@	25.00	75.00	
5	single windows and frames for 15″ wall. Sash rabbetted to pivots, segmental top (rad. 4′ 1″), 8 10″ x 15″ lights. Opening 2′ 9″ x 4′ 1″	@	10.00	50.00	355.00
	(3) Painting:				
	Roof trusses painted two coats graphite paint	@	50.00	50.00	50.00
	(4) Miscellaneous:				
4	3″ x 3″ x 4.8 x 3′ 6″ long angles bolted to coal bin opening, weighing 67 lbs.	@	.05	3.35	3.35

The Water Supply.—Continued.

(*d*) Coal Bin.

Cubical contents, net = 6,250 cu. ft.
Area of floor = 500 sq. ft.

(1) Floor:

500 sq. ft. of 8″ concrete floor, 1½″ top coat of 1:2 Portland cement and sand, 6½″ base of 1:3:5 Portland cement, sand and stone	@	.22	110.00	110.00
Carry forward				$14,710.02
731 Brought forward				$14,710.02

(2) Roof:

2 6″—12.25# "I" beams 18′ long.
5 5″ x 3″ x 8.2# angles, 36′ 7″ long.
8 6″ x 6″ x 14.9# " 8″ "

Weight of above steel = 2,000 lbs	@	$.06	$120.00	
680 bd. ft. 1″ sheathing, poplar	@	45.00	30.60	
35½ lin. ft. 10″ x ⅞″ dressed poplar trim	@	.05	1.77	
35½ " 2″ x 2″ moulding	@	.05	1.77	
35½ " 4″ x 1″ cap	@	.02	.71	
76 squares tar paper	@	1.25	95.00	249.85

(3) Painting:

Trim of roof painted two coats	@	3.00	3.00	3.00

(e) Tool Room.

Cubic contents, net = 1,400 cu. ft.
Area of floor = 112 sq. ft.

(1) Floor:				
112 sq. ft. 8″ concrete floor, 1½ top coat of 1:2 Portland cement and sand, 6½″ base of 1:3:5 Portland cement, and stone	@	.20	22.40	22.40
(2) Roof:				
5 5″ x 3″ x 8.2# angles 8′ 3″ long, weight 340 lbs	@	.05	17.00	
157 bd. ft. 1″ sheathing, poplar	@	45.00	7.06	
8½ lin. ft. 10″ x ⅞″ dressed poplar trim	@	.05	.41	
8½ " 2″ x 2″ moulding	@	.05	.41	
17½ sq. yds. tar paper	@	1.25	21.87	
				46.75
(3) Shelving:				
104 bd. ft. ⅞″ dressed poplar shelving	@	45.00	4.68	
				4.68
Carry forward				$15,036.70
732 Brought forward				$15,036.70
(4) Painting:				
750 sq. ft. walls and shelves painted two coats	@	$.02	$15.00	
				15.00
Total Item No. 11				$15,051.70

The Water Supply.—Continued.

Depreciation:

Ave. age 9 yrs. Ave. life 50 yrs. Int. rate 4%.
Annual Depreciation @ .63% = $94.83.

Accrued Depreciation @ 6.9%				1,038.57
Net physical value				$14,013.13

Item No. 12. Steel Stack.

(*a*) Excavation.

187 cu. yds. of muck excavation 16 ft. deep—bracing required	@	1.00	$187.00	$187.00

(*b*) Foundation.

90 cu. yds. mass concrete containing large boulders	@	6.00	540.00	
41 cu. yds. concrete (forms required)	@	7.50	307.50	
2,700 fire brick	@	35.00	94.50	
2 tons fire clay	@	5.00	10.00	
1 C. I. clean out door and frame 20″ x 30″ opening. Approximate weight 400 lbs	@	.04	16.00	
1 C. I. chimney pit cover and frame 3′ 10½″ x 4′ 10½″ opening- Approximate weight = 770 lbs	@	.04	30.80	
				998.80

(c) Stack.

1 steel stack 100′ 0″ high x 4′ 0″ weighing 21,500 lbs.	@	.05	1,075.00	
7,500 lbs. of cast iron in base and 6 anchor plates	@	.03	225.00	
550 lbs. of steel in 6 anchor bolts	@	.05	27.50	
9,500 circle fire brick in chimney	@	40.00	380.00	
1,400 common red brick in lining	@	20.00	28.00	
2 tons of fire clay in lining	@	5.00	10.00	
				1,745.50
Carry forward—Total Item No. 12				$2,931.30
733 Brought forward—Total Item No. 12				$2,931.30
Depreciation:				
Ave. age, 9 yrs. Ave. life, 30 yrs. Int. rate, 4%. Annual Depreciation @ 1.71% = $50.13.				
Accrued Depreciation @ 18.9%				554.02
Net physical value				$2,377.28

Item No. 13. Coal Chute.

62 cu. yds. concrete in walls and roof	@	12.00	$744.00	
2,004 lbs. of 1¼″ round rods (35 14′ long) in roof	@	.03	60.12	
127 sq. yds. woven wire fence in roof	@	.50	63.50	
				$867.62
Total, Item No. 13				$867.62

The Water Supply.—Continued.

Depreciation:

Ave. age, 9 yrs. Ave. life, 50 yrs. Int. rate, 4%.
Annual Depreciation @ .63% = $5.47.

Accrued Depreciation @ 6.9%				59.87
Net physical value				$807.75

Item No. 14. Oil House.

Cubic contents from bottom of footings to average height of roof = 611 cu. ft.
Area of floor = 61 sq. ft.

(*a*) Foundation.

3 cu. yds. concrete	@	12.00	$36.00	$36.00

(*b*) Walls.

213 sq. ft. 8″ concrete block wall	@	.20	42.60	
1/3 cu. yd. concrete in end walls	@	12.00	4.00	
				46.60
Carry forward				$82.60

734 Brought forward				$82.60
(c) Roof.				
2.7 cu. yds. reinforced concrete arch roof 6" thick	@	$16.00	$43.20	
383 lbs. ¾" round rods	@	.03	11.49	
270 sq. ft. woven wire fencing	@	.05	13.50	
				68.19
(d) Floor.				
Cinders	@	2.50	2.50	2.50
(e) Door.				
1—3′ 0″ x 7′ 0″ door and frame 3′ 4″ x 7′ 4″ top to segment. Door oak finished on one side. (Same as inside door in pumping station). Unpainted	@	15.00	15.00	15.00
Total, Item No. 14				$168.29
Depreciation:				
Ave. age, 9 yrs. Ave. life, 50 yrs. Int. rate, 4%. Annual Depreciation @ .63% = $1.06.				
Accrued Depreciation @ 6.9%				11.61
Net physical value				$156.68
Item No. 15. The Worthington Pump.				
(a) Pumping Engine.				
1 Worthington, double acting, horizontal duplex pumping engine of 1.5 million gallon capacity				$1,200.00

The Water Supply.—Continued.

(*b*) Foundation.

10 cu. yds. earth excavation	@	.50	$5.00	
8 " stone masonry laid in Portland cement	@	8.50	68.00	
1 4′ 3″ x 9′ 10″ x ½″ iron plate bolted on top of foundation with 4 1″ anchor bolts 4′ long. Approximate weight of plate = 850 pounds	@	.04	34.00	
				107.00
Carry forward				$1,307.00
735 Brought forward				$1,307.00

(*c*) Concrete Pit.

10½ cu. yds. of concrete including 4 steps	@	$8.50	$89.25	89.25

(*d*) Suction and Discharge Piping.

8′ 4″—10″ W. I. screw pipe	@	1.00	8.33	
2 —10″ extra heavy flanged couplings	@	6.40	12.80	
7′— 8″ " " W. I. screw pipe	@	1.24	8.68	
2 — 8″ " " flanged couplings	@	3.90	7.80	
Cutting, threading and erecting above piping	@	5.00	5.00	
				42.61
Total, Item No. 15				$1,438.86

Depreciation:

Ave. age, 15 yrs. Ave. life, 20 yrs. Int. rate, 4%.
Annual Depreciation @ 3.23% = $46.48.

Accrued Depreciation @ 67.2%	966.91
Net physical value	$471.95

Item No. 16. The Snow Pump.

(*a*) Pumping Engine.

1 horizontal, cross-compound, high duty, crank and flywheel, condensing pumping engine of a rated capacity of 1.5 M. G. D. against a total water pressure, including suction lift of 305 lbs. per sq. in. The valve motion is of the Corliss type. 4 single acting, outside packed, plungers. The pumping engine is complete with—

1 500 sq. ft. surface condenser.
1 6″ x 8″ x 7″ rotary dry vacuum pump.
1 4½″ x 3¾″ x 4″ duplex wet vacuum pump.
2 air pumps.
4 air chambers.
1 3″ x 2″ x 3″ duplex jacket pump.
1 reheating receiver.

736 Delivery relief and by-pass valve and all interior piping, valves, and traps for connecting these parts with each other and with the engine inside of their common nozzles, including all piping from the throttle valve on the steam end to and including the breeching "Y" on the suction and discharge end. Gages, oilers, revolution counters, lubricator and other accessories are furnished with the pumping engine.

Erected complete	$15,000.00

The Water Supply.—Continued.

(*b*) Foundation.

63 cu. yds. rock excavation	@	$4.50	$283.50	
34 " " earth "	@	.50	17.00	
114 " " of concrete	@	8.50	969.00	
				1,269.50

(*c*) Suction and Discharge Piping.

6′ 0″—10″ C. I. flanged pipe (ex. heavy).
21′ 6″—12″ " " "
1—12″ " " ⅛ bend.
1—12″ " " "Y"

Weight of above flanged pipe and specials—approximately 3,268 lbs.	@	.05	163.40	
2 12″ Eddy gate valves, set	@	38.00	76.00	
1 10″ heavy Eddy gate valve, set	@	76.00	76.00	
1 10″ " Chapman check valve with ¾″ pipe by-pass made of the following:				
2′—¾″ W. I. screw pipe—ex. heavy.				
2 —¾″ ells, extra heavy.				
1 —¾″ union, " "				
1 —¾″ globe valve.				
Complete	@	60.00	60.00	375.40
Carry forward—Total Item No. 16				$16,644.90
737 Brought forward—Total Item No. 16				$16,644.90

Depreciation:

Ave. age 9 yrs. Ave. life 40 yrs. Int. rate 4%.
Annual Depreciation @ 1.012%=$168.45.

Accrued Depreciation @ 11.2%				1,864.23
Net physical value				$14,780.67

Item No. 17. Auxiliaries.

(*a*) Feed Water Pump.

1 Epping-Carpenter #6772, duplex, steam pump 5¼" x 3½" x 5", taking suction from hot water tank				125.00

(*b*) Feed Water Heaters.

(1) Worthington Pump Heater:

Vertical heater 4' 10" high and 2' 8" in diameter, supported by 3 iron legs			$150.00	
(*a*) Foundation:				
2½ cu. yds. of excavation	@	$.50	1.25	
2 " " " concrete	@	10.00	20.00	
3 C. I. legs, approximate weight=135 pounds	@	.04	5.40	

The Water Supply.—Continued.

(*b*) Fittings:

2′ 0″—1½″ ex. heavy W. I. screw pipe	@	.10	.20	
1—1½″ ex. heavy tee	@	.10	.10	
1—1½″ " " elbow	@	.07	.07	
1—1½″ x 1¼″ bushing	@	.05	.05	
1—1½″ x ¾″ "	@	.10	.10	
1—¾″ brass safety valve	@	3.35	3.35	
Erecting fittings	@	1.50	1.50	
(2) Secondary Heater:				
1 Wheeler feed water heater supplied with steam from the exhaust of the auxiliary pumps, in place			175.00	
Carry forward			$357.02	$125.00
738 Brought forward				$125.00
Brought forward			$357.02	
(3) Primary Heater:				
Primary Heater	@	200.00	557.02	

(*c*) Oil Separator and Tank.

1 Cochrane 14″ horizontal, vacuum oil separator (Fig. 21 in catalogue)	@	200.00	200.00	
1 steel tank 6′ 6″ long—20″ diameter resting on floor	@	50.00	50.00	

Fittings:				
3′ 0″—1½″ ex. hvy. W. I. screw pipe	@	.10	.30	
6′ 0″—1″ " " " " " "	@	.06	.36	
1—1½″ " " flanged union	@	.59	.59	
1—1″ " " " "	@	.38	.38	
1—1½″ " " 45° bend	@	.10	.10	
2—1″ " " elbow	@	.04	.08	
1—1½″ gate valve	@	2.00	2.00	
1—1″ " "	@	1.00	1.00	
Erecting above fittings	@	2.50	2.50	
				257.31
(*d*) Hot Water Tank.				
1 vertical steel tank 8′ 0″ high x 2′ 0″ diameter. All water from steam lines, traps and condensed water pumped by wet vacuum and jacket pumps are collected here and any deficiency in the amount needed by the boiler feed pump is made up by fresh water added to the tank by means of an automatic regulator	@	75.00	75.00	
(*e*) Steam Separator.				
1 4″ separator on Snow pump	@	35.00	35.00	110.00
Total Item No. 17				$1,049.33

The Water Supply.—Continued.

Depreciation:

Ave. age 9 yrs. Ave. life 30 yrs. Int. rate 4%.
Annual Depreciation @ 1.71%=$17.94.

Accrued Depreciation @ 18.9%	198.32
Net physical value	$851.01

739 Item No. 18. Boiler Plant.

(*a*) 1 Battery containing two sterling 148 H. P. boilers. Each boiler has 1,477 sq. ft. of submerged heating surface and 35.7 sq. ft. of grate surface. Boilers designed for 150# operating pressure and tested to 225# hydrostatic pressure. They are complete with cast iron front, doors, grates, etc., and are fitted with 12" steam gauges, consolidated pop safety valves, Reliance water columns with water gauge, quick closing water glass valves, gauges cocks, blow-off valves and drain pipes to ash pits.

296 H. P. erected complete	@	$11.00	$3,256.00	$3,256.00

(*b*) Miscellaneous Piping on Both Boilers.

5′ 0″—3″ W. I. screw pipe, ex. hvy	@	.25	1.25
10′ 0″—2½″ " " " " "	@	.19	1.90
19′ 0″—1½″ " " " " "	@	.10	1.90
45′ 0″—¾″ " " " " "	@	.04	1.80
6′ 0″—½″ " " " " "	@	.03	.18
15′ 0″—¼″ " " " " "	@	.03	.45
4—1½″ tees, extra heavy	@	.10	.40
2—¾″ " " "	@	.04	.08
2—¼″ " " "	@	.03	.06
2—2½″ elbows, " "	@	.19	.38

2—1½" " " "	@	.07	.14	
12—¾" " " "	@	.03	.36	
6—¼" " " "	@	.02	.12	
4—¾" 45° " " "	@	.05	.20	
2—¾" unions, " "	@	.10	.20	
2—2½" x 1½" brushings, extra heavy	@	.18	.36	
2—1½" x ¾" " " "	@	.10	.20	
4—1½" plugs	@	.03	.12	
2—1½" flange unions	@	.59	1.18	
2—¾" globe valves, Chapman	@	5.50	11.00	
4—¾" " "	@	5.50	22.00	
2—¼" " "	@	3.00	6.00	
2—1½" " "	@	12.80	25.60	
Cutting, threading and erecting above piping	@	20.00	20.00	
				95.88
Carry forward				$3,351.88
740 Brought forward				$3,351.88

(c) Boiler Blow-off Pipes for Both Boilers.

26' 0"—3" W. I. screw pipe, ex. hvy	@	$.25	$6.50	
48' 0"—2½" " " " " " "	@	.19	9.12	
1—3" tee	@	.39	.39	
4—2½" tees	@	.26	1.04	
7—2½" elbows	@	.19	1.33	
2—3" x 2" bushings	@	.20	.40	
2—2½" blow-off valves	@	20.00	40.00	
Cutting, threading and erecting above piping	@	10.00	10.00	

The Water Supply.—Continued.

Safety Valve Vent:				
76′ 0″—3″ W. I. screw pipe, erected	@	.30	22.80	
4—3″ elbows	@	.27	1.08	
				92.66
(*d*) Boiler Settings.				
*170 cu. yds. earth excavation in trench	@	.50	85.00	
*142 " " concrete	@	8.00	1,136.00	
61 sq. ft. 8″ concrete floor in ash pit	@	.20	12.20	
49,400 common red brick in Portland cement mortar	@	17.00	839.80	
16,300 fire brick	@	30.00	489.00	
6 tons fire clay	@	5.00	30.00	
				2,592.00
(*e*) Smoke Flue.				
60 cu. yds. earth excavation	@	.50	30.00	
6.7 " concrete in walls and roof	@	10.00	67.00	
7,000 fire brick	@	35.00	245.00	
1—C. I. clean out door and frame, approximate weight = 1,400#	@	.04	56.00	
2—tons fire clay	@	5.00	10.00	
				408.00
Carry forward—Total Item No. 18				$6,444.54

*Includes foundation for an additional battery of 2—148 H. P. Boilers.

741	Brought forward—Total Item No. 18			$6,444.54
	Depreciation:			
	Ave. age 9 yrs. Ave. life 25 yrs. Int. rate 4%. Annual Depreciation @ 2.31% = $148.87.			
	Accrued Depreciation @ 25.4%			1,636.91
	Net physical value			$4,807.63

Item No. 19. All Piping in Station.

(a) Hot Water Pipes.

114'—1½" extra heavy W. I. screw pipe, asbestos covered	@	$.28	$31.90
74'—2" extra heavy W. I. screw pipe, asbestos covered	@	.33	24.42
2—1½" extra heavy tees	@	.10	.20
1—2" " " "	@	.15	.15
9—1½" " " elbows	@	.07	.63
12—2" " " "	@	.10	1.20
1—2" " " 45° bend	@	.15	.15
2—1½" " " flanged union	@	.59	1.18
1—2" " " " "	@	.71	.71
1—2" plug	@	.03	.03
2—2" x 1½" bushings	@	.05	.10
3—1½" globe valves	@	3.85	11.55
1—2" brass flanged gate valve	@	16.20	16.20
1—½" " check valve with companion flange	@	12.80	12.80
Cutting, threading and erecting above piping	@	40.00	40.00
			141.22

The Water Supply.—Continued.

(*b*) Miscellaneous Water Pipes.

59′ 0″—2″ ex. hvy. W. I. screw pipe	@	.13	7.67	
32′ 6″—1½″ " " " " "	@	.10	3.25	
101′ 0″—1″ " " " " "	@	.06	6.06	
20′ 0″—½″ " " " " "	@	.03	.60	
Carry forward			$17.58	$141.22
742 Brought forward				$141.22
Brought forward			$17.58	
4—2″ extra heavy tees	@	$.15	.60	
1—1½″ " " "	@	.10	.10	
8—1″ " " "	@	.05	.40	
2—1½″ " " "	@	.10	.20	
5—2″ " " elbows	@	.10	.50	
2—1½″ " " "	@	.07	.14	
12—1″ " " "	@	.04	.48	
5—½″ " " "	@	.02	.10	
3—2″ " " flanged unions	@	.85	2.55	
2—½″ " " unions	@	.33	.66	
5—2″ " " 45° bends	@	.15	.75	
1—2″ " " cross	@	.26	.26	
1—2″ x 1¼″ bushing	@	.08	.08	
1—2″ x 1″ "	@	.10	.10	

3—1″ x ½″ “	@	.05	.15	
1—2″ plug	@@	.03	.03	
4—1″ plugs	@@	.02	.08	
2—½″ “	@@	.01	.02	
1—2″ check valve	@@	6.00	6.00	
1—2″ gate valve	@@	9.00	9.00	
4—2″ flanged gate valves	@@	18.00	72.00	
1—1¼″ “ “ “ (brass)	@@	11.25	11.25	
4—1″ globe valves (2 Chapman)	@@	6.00	24.00	
2—½″ “ “	@@	1.00	2.00	
1—1½″ Chapman flanged globe valve	@@	16.80	16.80	
1—2″ Foster #56019 flanged pressure regulator	@@	50.00	50.00	
1—1½″ pressure regulator	@@	25.00	25.00	
1—2″ plug valve	@@	15.00	15.00	
1—1″ “ “	@@	5.00	5.00	
1—ball cock, box and float	@@	25.00	25.00	
1—2″ flange relief valve—brass, angle outlet—Lunkenheimer	@@	20.00	20.00	
Cutting, threading and erecting above piping	@	30.00	30.00	
				335.83

(*c*) Steam Piping in Station.

Main Steam Header and Header for Auxiliaries:

21′ 0″—8″ ex. hvy. W. I. screw pipe (asb. covered)	@	1.83	38.43	
12′ 0″—5″ “ “ W. I. screw pipe (asb. covered)	@	.91	10.92	
Carry forward			$49.35	$477.05

The Water Supply.—Continued.

743	Brought forward				$477.05
	Brought forward			$49.35	
	33′ 0″—2″ ex. hvy. W. I. screw pipe (asbestos covered)	@	$.33	10.89	
	33′ 8″—1½″ ex. hvy. W. I. screw pipe (asbestos covered)	@	.28	9.42	
	2—8″ x 5″ extra heavy, flanged tees	@	18.65	37.30	
	1—8″ x 2″ " " " tee	@	18.65	18.65	
	1—8″ x 1″ " " " "	@	18.65	18.65	
	1—2″ extra heavy tee	@	.15	.30	
	7—1½″ " " "	@	.10	.70	
	1—2″ " " elbow	@	.10	.10	
	2—1½″ " " "	@	.07	.14	
	3—8″ " " flanged couplings	@	5.00	15.00	
	2—5″ " " " "	@	2.30	4.60	
	2—1½″ " " " "	@	.75	1.50	
	1—2″ x 1½″ bushing	@	.05	.05	
	1—1½″ plug	@	.02	.02	
	4—5″ flanged globe valves	@	32.50	130.00	
	1—2″ " " " (brass)	@	16.20	16.20	
	Cutting, threading and erecting above piping	@	50.00	50.00	
					362.87
	Steam Line to Snow Pump:				
	19′ 0″—4″ extra heavy W. I. pipe containing 1 90° bend (asbestos covered)	@	.75	14.25	
	1—4″ extra heavy flanged couplings	@	1.80	1.80	
	1—4″ flanged globe valve	@	25.00	25.00	
	Erecting above piping	@	10.00	10.00	
					51.05

Steam Line to Worthington Pump:

15′ 6″—5″ extra hvy. W. I. screw pipe	@	.53	8.22	
53′ 0″—4″ " " " " " "	@	.38	20.14	
1—4″ extra heavy 90° bend	@	.44	.44	
2—5″ " " elbow	@	.73	1.46	
1—4″ " " "	@	.44	.44	
Carry forward			$30.70	$890.97
744 Brought forward				$890.97
Brought forward			$30.70	
1—4″ extra heavy, flanged elbow	@	$4.05	4.05	
1—5″ " " " union	@	2.30	2.30	
3—4″ " " " "	@	1.70	5.10	
1—8″ x 4″ reducing flange	@	3.90	3.90	
1—4″ Chapman flanged globe valve	@	25.00	25.00	
1—4″ solid brass " " "	@	36.00	36.00	
3′ 6″—¼″ W. I. screw pipe	@	.02	.07	
2—¼″ globe valves	@	1.00	2.00	
1—1 pt. lubricator	@	7.50	7.50	
Cutting, threading, and erecting above piping	@	20.00	20.00	
				136.62

The Water Supply.—Continued.

Auxiliary Exhaust Header:				
25′ 0″—3″ ex. hvy. W. I. screw pipe	@	.25	6.25	
17′ 0″—2″ " " " " " "	@	.13	2.21	
5—3″ extra heavy tees	@	.39	1.95	
4—2″ " " "	@	.15	.60	
1—3″ " " elbow	@	.27	.27	
1—3″ " " flanged union	@	1.25	1.25	
1—3″ x 2″ bushing	@	.20	.20	
2—3″ globe valves	@	14.00	28.00	
Cutting threading and erecting above piping	@	7.50	7.50	
				48.23
Steam Exhaust & Miscellaneous Piping for Boiler Feed Pump:				
2′ 0″—2½″ W. I. screw pipe	@	.19	.38	
8′ 0″—1¼″ " " "	@	.07	.56	
16′ 0″—¾″ " " " , ex. hvy	@	.04	.64	
4′ 0″—¼″ " " " , " "	@	.03	.12	
2—1¼″ elbows	@	.06	.12	
1—1¼″ flanged union	@	.55	.55	
1—2″ x 1¼″ bushing	@	.09	.09	
2—¾″ extra heavy elbows	@	.03	.06	
1—¾″ flanged coupling	@	.40	.40	
Carry forward			$2.92	$1,075.82

745 Brought forward				$1,075.82
Brought forward			$2.92	
1—2½" gate valve	@	$16.50	16.50	
1—¾" Chapman globe valve	@	5.50	5.50	
2—¼" globe valves	@	1.00	2.00	
1—½ pint lubricator	@	5.50	5.50	
Cutting, threading and erecting above piping	@	5.00	5.00	
				37.42
Steam, Exhaust & Miscellaneous Piping to Wet Vacuum Pump:				
22' 0"—1½" W. I. screw pipe	@	.10	2.20	
10' 0"—¾" " " "	@	.04	.40	
22' 0"—½" " " " ex. hvy	@	.03	.66	
2—1½" elbows	@	.07	.14	
1—¾" "	@	.03	.03	
8—½" " , extra heavy	@	.02	.16	
1—1½" flanged union	@	.75	.75	
1—¾" union	@	.10	.10	
2—½" " , extra heavy	@	.10	.20	
1—½" flanged coupling, ex. hvy	@	.50	.50	
1—¾" tee	@	.04	.04	
1—2" x ¾" bushing	@	.13	.13	
1—1½" check valve	@	3.50	3.50	
3—½" globe valves	@	1.00	3.00	
1—½" oil cup	@	.50	.50	
Cutting, threading and erecting above piping	@	6.00	6.00	
				18.31

The Water Supply.—Continued.

Steam, Exhaust & Miscellaneous Piping to Dry Vacuum Pump:

7′ 0″—1¼″ W. I. screw pipe	@	.07	.49	
13′ 0″—1″ " " " , ex. hvy	@@	.06	.78	
1—1¼″ elbow	@@	.06	.06	
2—1″ elbows, extra heavy	@@	.04	.08	
1—1¼″ flanged coupling	@@	.60	.60	
1—1″ " " , ex. hvy	@@	.45	.45	
1—3″ x 1¼″ bushing	@@	.25	.25	
Cutting, threading and erecting above piping	@	3.00	3.00	
				5.71
Carry forward				$1,137.26

746

Brought forward				$1,137.26

Steam, Exhaust & Miscellaneous Piping to Jacket Pump:

8′ 0″—1″ W. I. screw pipe	@	$.06	$.48	
33′ 0″—½″ " " " ex. hvy	@@	.03	.99	
1—1″ elbow	@@	.04	.04	
5—½″ " , extra heavy	@@	.02	.10	
1—1″ union	@@	.10	.10	
1—½″ " " "	@@	.07	.07	
2—1″ flanged couplings	@@	.45	.90	
1—1″ check valve	@@	1.55	1.55	
Cutting, threading and erecting above piping	@	2.50	2.50	
				6.73

Exhaust Piping to Air Pumps:					
4′ 0″—1½″ W. I. screw pipe	@	.10	.40		
9′ 0″—1¼″ " " "	@@	.07	.63		
1—1½″ tee	@@	.10	.10		
3—1¼″ elbows	@@	.06	.18		
1—2″ x 1½″ bushing	@@	.05	.05		
2—1½″ x 1¼″ "	@@	.02	.04		
Cutting, threading and erecting above piping	@	2.00	2.00		
					3.40
Miscellaneous Steam and Exhaust Piping:					
15′ 0″—1¼″ W. I. screw pipe	@	.06	.90		
65′ 0″—1″ " " "	@@	.04	2.60		
32′ 0″—¾″ " " "	@@	.03	.96		
6″—¼″ " " "	@@	.02	.12		
2—¼″ tees	@@	.07	.14		
1—1″ tees	@@	.05	.05		
1—¾″ tee	@@	.04	.04		
1—1¼″ elbow	@@	.05	.05		
4—1″ "	@@	.04	.16		
8—¾″ "	@@	.03	.24		
1—¼″ "	@@	.02	.02		
1—1¼″ union	@@	.14	.14		
3—1″ flanged unions	@	.38	1.14		
Carry forward			$6.56		$1,147.39

Brought forward				$1,147.39
Brought forward			$6.56	
1—1″ union	@	$.10	.10	
5—¾″ “	@	.08	.40	
8—1″ 45° bends	@	.06	.48	
5—¾″ “ “	@	.05	.25	
2—2½″ x 1″ bushing	@	.10	.20	
1—1¼″ x ¾″ “	@	.04	.04	
1—1¼″ x 1″ “	@	.02	.02	
1—1″ x ¾″ “	@	.02	.02	
1—¾″ safety valve	@	1.25	1.25	
1—¼″ pet cock	@	1.00	1.00	
2—1″ Chapman globe valves	@	6.00	12.00	
1—¾″ globe valve	@	1.25	1.25	
1—¾″ “ “ outside packed	@	1.25	1.25	
1—McDaniel's Pressure Trap	@	25.00	25.00	
1—#2 Wright “ “	@	27.00	27.00	
Cutting, threading and erecting above piping	@	15.00	15.00	
				91.82
Radiator in Engine Room:				
400′ 0″—1″ W. I. screw pipe, ex. hvy	@	.06	24.00	
19—1″ return bends	@	.26	4.94	
3—1″ tees	@	.05	.15	
2—1″ elbows	@	.04	.08	
2—1″ unions	@	.12	.24	
1—1½″ x 1″ bushing	@	.03	.03	
1—1″ globe valve—Chapman outside packed	@	6.00	6.00	

1—#3 Wright steam trap	@	21.00	21.00		
1—6" Ashcroft steam gauge and siphon	@	15.00	15.00		
Cutting, threading and erecting above piping	@	30.00	30.00		
					101.44

(*d*) Miscellaneous Drain Piping and Vents in Station.

32′ 0"—8" W. I. screw pipe	@	.82	26.24		
8′ 0"—5" " " "	@	.38	3.04		
28′ 0"—4" " " " in 5′ trench	@	.60	16.80		
55′ 0"—3" " " " extra heavy	@	.25	13.75		
10′ 0"—2" " " " in 2′ trench	@	.20	2.00		
20′ 0"—1" " " "	@	.04	.80		
20′ 0"—¾" " " "	@	.03	.60		
25′ 0"—½" " " "	@	.02	.50		
Carry forward			$63.73	$1,340.65	
748 Brought forward				$1,340.65	
Brought forward			$63.73		
1—5" elbow	@	$.63	.63		
1—4" "	@	.38	.38		
3—3" " extra heavy	@	.27	.81		
2—2" "	@	.09	.18		
2—1" "	@	.04	.08		
3—½" "	@	.02	.06		
1—4" tee	@	.55	.55		
2—3" " extra heavy	@	.39	.78		
2—2" "	@	.13	.26		

The Water Supply.—Continued.

2—1″ tee	@	.05	.10	
1—3″ flanged union, extra heavy	@	1.25	1.25	
2—2″ " "	@	.71	1.42	
1—1″ " "	@	.38	.38	
1—3″ plug	@	.07	.07	
1—2″ "	@	.03	.03	
1—4″ x 2″ bushing	@	.43	.43	
1—8″ Lyman Iron exhaust head	@	25.00	25.00	
1—3″ " " " "	@	7.50	7.50	
1—2″ gate valve	@	3.00	3.00	
1—1″ globe valve	@	1.50	1.50	
1—8″ McCarthy exhaust relief valve	@	75.00	75.00	
28′ 0″—4″ vitrified tile	@	.15	4.20	
168′ 0″—5″ " "	@	.25	42.00	
10—5″ " " tees	@	1.00	10.00	
37′ 0″—6″ " "	@	.25	9.25	
Cutting, threading and erecting above piping	@	50.00	50.00	
				298.59
Total Item No. 19				$1,639.24
Depreciation:				
Ave. age 9 yrs. Ave. life 30 yrs. Int. rate 4%. Annual Depreciation @ 1.714% = $28.10.				
Accrued Depreciation @ 18.9%				309.82
Net physical value				$1,329.42

Item No. 20. Piping in Station Yard.

Pump Suctions:

77′ 0″—10″ C. I. H. & S. pipe, weight 2.42 tons	@	$25.90	$62.68	
Laying 77′ 0″ 10″ C. I. H. & S. pipe in 4 ft. trench	@	.45	36.45	
1 10″ x 10″ x 10″ tee.				
1 12″ x 12″ x 12″ "Y", one branch flanged.				
1 10″ elbow, H. & S.				
2 12″ x 10″ reducer, H. & S.				
Weight of above specials = 2,000#	@	.04	80.00	
1 10″ gate valve, set	@	31.00	31.00	
				$210.13

Pump Discharges:

42′—10″ C. I. flange pipe, weighing 2.12 tons	@	100.00	212.00	
167′—10″ C. I. H. & S. pipe, weighing 8.46 tons in 3′ trench	@	1.50	250.50	
1 10″ flange and hub ell.				
1 10″ x 10″ x 10″ C. I. "Y" branch.				
1 10″ C. I. blank flange.				
1 10″ " " H. & S. 45° bend.				
2 10″ " " flanged 90° bends.				
1 8″ " " H. & S. " "				
1 10″ x 8″ C. I. H. & S. reducer.				
1 10″ C. I. H. & S. tee.				
1 10″ x 10″ x 10″ C. I. H. & S. "Y" branch.				
1 air chamber consisting of 1 10″ x 20″ flanged increaser, 13′ 0″—20″ flanged pipe, and 1 20″ flanged cap.				
Weight of above specials = 9,220#	@	.04½	414.90	
2 10″ Eddy gate valves, set	@	31.00	62.00	
				939.40

The Water Supply.—Continued.

Connection from Spring No. 22:				
101′—6″ C. I. H. & S. pipe, weighing 1.67 tons in 3′ trench	@	.80	80.80	
1 10″ x 8″ reducer.				
1 8″ x 6″ "				
1 6″ 90° bend.				
1 6″ x 6″ x 6″ tee.				
Weight of above specials = 684#	@	.03	20.52	
Carry forward			$101.32	$1,149.53
750 Brought forward				$1,149.53
Brought forward			$101.32	
1 6″ check valve, set	@	$15.60	15.60	
2 6″ gate valves, set	@	13.60	27.20	
				144.12
Blow-off from Spring Line to Creek:				
32′ 0″—5″ W. I. screw pipe in 3′ trench	@	.55	17.60	17.80
Blow-off from Boilers:				
28′ 0″—5″ W. I. extra heavy screw pipe in 3′ trench	@	.70	19.60	19.60
Blow-off from Secondary Heater to Creek:				
40′ 0″—1″ W. I. screw pipe, galvanized	@	.15	6.00	6.00

Drain from Worthington Pit to Creek:				
37′ 0″—6″ vitrified tile in 4′ trench	@	.30	11.10	11.10
Total Item No. 20				$1,347.95
Depreciation:				
Ave. age 10 yrs. Ave. life 50 yrs. Int. rate 4%. Annual depreciation @ .63% = $8.49.				
Accrued depreciation @ 7.9%				106.49
Net physical valve				$1,241.46
Item No. 21. Concrete Retaining Wall—Wall Lift.				
140 cu. yds. concrete (forms required)	@	8.00	1,120.00	
350 " " earth fill behind wall	@	.50	175.00	
				1,295.00
Total Item No. 21				$1,295.00
Depreciation:				
Ave age 8 yrs. Ave. life 50 yrs. Int. rate 4% Annual Depreciation @ .63% = $8.16.				
Accrued depriciation @ 6.03%				78.09
Net physical valve				$1,216.91

The Water Supply.—Continued.

751 Item No. 22. Station Yard Improvements.

1,080 cu. yds. solid side hill rock excavation crushed and used for concrete in building foundation	@	$3.00	$3,240.00	
565 cu. yds, earth fill on lower side of station site, borrowed to make up deficiency not furnished by excavation	@	.75	423.75	
200 lin. ft. woven wire fence 4′ 6″ high	@	.05	10.00	
24 4″ x 4″ x 8′ 0″ locust, oak and poplar posts	@	.40	9.60	
170 lin. ft. of log retaining wall along the river, 3′ high, made of 4 or 5 logs piled up with short tie logs running into bank 6′ to 8′, spand 5′ to 10′ apart	@	.75	127.50	
210 cu. yds. earth and loose rock fill at coal chute	@	.50	105.00	
				$3,915.85
Total Item No. 22				$3,915.85
Depreciation:				
Ave. age 8 yrs. Ave. life 50 yrs. Int. rate 4%. Annual Depreciation @ .63% = $24.67.				
Accrued Depreciation @ 6.03%				236.13
Net physical value				$3,679.72

Item No. 23. Station Miscellaneous.

	Radiator Frame:				
	3 wood standards supporting heating coil	@	$1.00	$3.00	
	44 bd. ft. 3′ x 6′ & 2″ x 4″ dressed poplar	@	50.00	2.20	
	60 C. I. pipe hangers	@	.25	15.00	
					$20.20
	Carry forward				$20.20
752	Brought forward				$20.20
	Pump:				
	1 Weinman double acting, single cylinder pump 6″ x 3¾″ x 8″, purchased in 1907 and used only during construction of twin tanks	@	$75.00	$75.00	75.00
	Boiler:				
	1 Erie City "Economic" boiler 80 H. P., contains 42—4″ flues, 5′0″ long and 76—3½″ flues, 10′ 0″ long. It is fitted with 1—4″ angle valve, 1—4″ globe valve, 1 water column and 1—2″ safety valve. Purchased in 1900 and removed in 1907 when the Sterling boilers were placed in fair repair	@	800.00	800.00	800.00
	Table:				
	1 office table with 4 drawers, 4′ 4″ x 3′ 0″ top, built of dressed oak	@	15.00	15.00	15.00
	Pictures and Frames:				
	5 frames and glasses on engine plans averaging 26″ x 38″	@	1.00	5.00	5.00

The Water Supply.—Continued.

Coal Scales:				
1 Fairbanks Morse "Standard No. 4" scale in pit	@	65.00	65.00	
4 cu. yds. earth excavation for pit	@	.50	2.00	
4 cu. yds. concrete in 8" walls 4' 0" high and in floor of pit	@	10.00	40.00	
				107.00
Coal Wagon:				
1 No. 2 light pattern charging barrow	@	33.00	33.00	33.00
Carry forward				$1,055.20
753 Brought forward				$1,055.20
Oil Filter:				
1 No. 3 Cross oil filter	@	$40.00	$40.00	40.00
Pit to Cavern Under Station:				
4 cu. yds. rock excavation	@	4.00	16.00	
2160 common red brick in Portland cement mortar	@	18.00	38.88	
18 bd. ft. 2" oak plank	@	60.00	1.08	
				55.96
Pit for Snow Auxiliaries:				
51 cu. yds. earth excavation	@	.50	25.50	
6½ " concrete in 10" walls 9' 2" high	@	9.00	58.50	
256 sq. ft. 8" concrete floor	@	.20	51.20	
				135.20
Iron Spiral Stairway in Auxiliary Pit:				
4½ ft. in diameter, 8' high with hand rail	@	100.00	100.00	100.00

Board Walk over Auxiliary Pit:				
35 bd. ft. ¾" tongue and groove pine	@	50.00	1.75	
52 " 2" x 6" pine S48	@	50.00	2.60	
				4.35
Hangers for Pipes:				
135 lbs. 1" round rods with 3 turnbuckles	@	.06	8.10	
25 lbs ½" round rods with 4 turnbuckles	@	.06	1.50	
				9.60
Total Item No. 23				$1,400.31
Depreciation:				
Ave. age 11 yrs. Ave. life 25 yrs. Int. rate 4%. Annual Depreciation @ 2.31% = $32.35.				
Accrued Depreciation @ 32.4%				453.70
Net physical value				$946.61

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Item No. 24. The Beaver Pond Station Building.

Area of floor = 1,313 sq. ft.
Cubic contents, outside dimensions from bottom of sills to average height of roof = 26,566 cu. ft.

(1) Foundation:				
4 cu. yds. Portland cement rubble masonry piers	@	$10.00	$40.00	$40.00

The Water Supply.—Continued.

(2) Walls and Framing:				
1,734 bd. ft. oak in sills, joists, posts, etc.	@	50.00	86.70	
2,553 bd. ft. 1″ oak sheathing on walls	@	55.00	140.41	
285 sq. yds. building paper	@	.03	8.55	
285 " #23 gauge corrugated galv. iron	@	.90	256.50	
				492.16
(3) Lumber in Roof:				
2,015 sq. ft. of ⅞″ dressed pine tongue and groove flooring for sheathing.	@	50.00	100.75	
1,856 bd. ft. rough oak lumber in rafters and bracing	@	50.00	92.80	
237 bd. ft. trim at eaves, dressed yellow pine painted two coats	@	55.00	13.03	
				206.58
(4) Roofing:				
225 sq. yds. Carey patented roofing (tarred paper and cloth)	@	.40	90.00	90.00
(5) Doors and Windows:				
All doors, sashes and frames are of yellow pine, painted two coats.				
4 double sash windows—one sash fixed, one sliding. Each sash 34″ x 36″, with 6—10″ x 16″ lights	@	7.50	30.00	
Carry forward			$30.00	$828.74
755 Brought forward				$828.74
Brought forward			$30.00	
3 double sash windows—one sash fixed, one sliding, each sash 28″ x 32″, with 4—10 x 14″ lights	@	$6.00	18.00	
2 doors 3′ 0″ x 7′ 0″, made of 2 layers of tongue and groove ⅞″ yellow pine flooring	@	10.00	20.00	
				68.00

(6) Coal Bin:

(6) Coal Bin:				
1,251 bd. ft. rough oak in joists, siding and flooring	@	50.00	62.55	62.55
(7) Painting:				
All doors, windows and trim at eaves painted two coats	@	25.00	25.00	25.00
Total Item No. 24				$984.29
Depreciation:				
Ave. age 4 yrs. Ave. life 15 yrs. Int. rate 4%. Annual Depreciation @ 4.8% = $47.25.				
Accrued Depreciation @ 21.8%				214.58
Net Physical Value				$769.71
Item No. 25. Steel Stack and Breeching.				
(*a*) Stack.				
3,200 lbs. No. 10 steel in stack and breeching	@	$.06	$192.00	$192.00
(*b*) Anchors.				
6 cu. yds. excavation for tie rods	@	.50	3.00	
2 " concrete for tie anchors	@	10.00	20.00	
4—1" anchor rods with eye, 6' 0" long and plate 1' 0" x 1' 0" x ½"	@	1.50	1.50	
330 lin. ft. ⅜" woven wire rope for bracing	@	.05	16.50	
Carry forward			$41.00	$192.00

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The Water Supply.—Continued.

756	Brought forward			$192.00
	Brought forward		$41.00	
380 lin. ft. 3/8" twisted wire rope for bracing (6 strand)	@	$ .05	19.00	
Stack and breeching painted	@	7.50	7.50	
				67.50
	Total Item No. 25			$259.50
	Depreciation:			
	Ave. age 4 yrs. Ave. life 15 yrs. Int. rate 4%. Annual Depreciation @ 4.8% = $12.46.			
	Accrued Depreciation @ 21.8%			56.57
	Net physical value			$202.93

Item No. 26. Worthington Pump.

1 duplex, double acting, horizontal steam pump, size 20" x 10¼" x 10". Plungers cut down to 9". Operates under 100# steam pressure against 350' head. Capacity 1 million gallons per day				$750.00
	Foundation:			
5 cu. yds. earth excavation	@	$ .50	$2.50	
4 " " stone masonry laid in Portland cement	@	8.00	32.00	

1—6′ 0″ x 3′ 4″ x ½″ iron plate bolted on top of foundation with 4—1″ anchor bolts 12″ long	@	16.00	16.00	
				50.50
Total Item No. 26				$800.50
Depreciation:				
Age 23 yrs. Life 35 yrs. Int. rate 4%. Annual Depreciation @ 1.31% = $10.49.				
Accrued Depreciation @ 49.8%				398.65
Net physical value				$401.85

757

Item No. 27. Feed Water Heater.

Feed water heater 4′ 6″ high x 20″ diameter	@	$75.00	$75.00	
140# C. I. in legs	@	.04	5.60	
1 cu. yd. excavation for foundation	@	.50	.50	
1 " " Portland cement concrete in foundation	@	12.00	12.00	
				$93.10
Total Item No. 27				$93.10
Depreciation:				
Age 23 yrs. Life 35 yrs. Int. rate 4%. Annual Depreciation @ 1.31% = $1.22				
Accrued Depreciation @ 49.8%				46.36
Net physical value				$46.74

The Water Supply.—Continued.

Item No. 28. Boiler Plant.

(*a*) 80 H. P. Boiler.

Boiler made by the Erie City Iron Works. 80 H. P., horizontal tubular boiler, 54″ diameter and 15′ 0″ long, and containing 64—3″ tubes. The boiler is designed for a working pressure of 100 lbs. Boiler is complete with C. I. front, flues, grates, doors, etc.	@	$12.00	$960.00	
Fittings:				
1—2″ Lonegar pop safety valve	@	10.00	10.00	
1—6″ Ashcroft steam gauge with siphon and cock	@	15.00	15.00	
1—Combination #1 Wright improved water column with gauge glass and 3 cocks	@	20.00	20.00	
				1,005.00

(*b*) 100 H. P. Boiler.

Boiler made by the Erie City Iron Works, 100 H. P., horizontal, tubular boiler 60″ diameter and 16′ long, and containing 54—4″ tubes. The boiler is designed for a working pressure of 100 lbs. Boiler is complete with C. L. front, flues, grates, doors, etc.	@	$12.00	$1,200.00	
Carry forward				$1,005.00

758	Brought forward				$1,005.00
	Fittings:				
32—710	1—2½" Scott pop safety valve	@	30.00	30.00	
	1—6" Ashcroft steam gauge with siphon and cock	@	15.00	15.00	
	1—combination #1 Wright improved water column with gauge glass and 3 cocks	@	20.00	20.00	
					$1,265.00

(c) Micellaneous Piping on Both Boilers.

Water Columns, Whistles, etc.:				
8' 0"—1¼" W. I. screw pipe	@	.06	.48	
5' 0"—1" " " "	@	.04	.20	
2—1¼" elbows	@	.05	.10	
2—1" street elbows	@	.06	.12	
2—1¼" tees	@	.07	.14	
2—1" "	@	.05	.10	
1—1¼" union	@	.14	.14	
2—1" "	@	.10	.20	
1—1¼" x 1" bushing	@	.02	.02	
2—1" plugs	@	.01	.02	
1—1¼" globe valve	@	1.90	1.90	
1—1" " "	@	1.35	1.35	
Cutting, threading and erecting above piping	@	2.50	2.50	
				7.27

The Water Supply.—Continued.

Boiler Blow-off Pipes:

1′ 0″—2½″ W. I. screw pipe	@	.14	.14	
6′ 0″—2″ " " "	@	.09	.54	
1′ 0″—1¼″ " " "	@	.06	.06	
2′ 0″—1″ " " "	@	.04	.08	
6′ 0″—¾″ " " "	@	.03	.18	
Carry forward			$1.00	$2,277.27
759 Brought forward				$2,277.27
Brought forward			$1.00	
1—1¼″ x 1″ reducing coupling	@	$.03	.03	
1—1″ tee	@	.05	.05	
1—1″ street elbow	@	.06	.06	
1—1″ union	@	.10	.10	
1—1″ x ¾″ bushing	@	.02	.02	
1—¾″ elbow	@	.03	.03	
1—1″ globe valve	@	1.35	1.35	
1—¾″ " "	@	1.05	1.05	
Cutting, threading and erecting above piping	@	2.50	2.50	
				6.19

(*d*) Boiler Settlings.

40 cu. yds. excavation in trenches	@	.50	20.00	
36½ " Portland cement concrete	@	8.00	292.00	
19,000 No. 1 hard burned brick in lime mortar	@	17.00	323.00	

400 fire brick	@	30.00	12.00	
48 sq. ft. 8″ concrete floor in ash pit	@	.20	9.60	
380 lbs. C. I. in stiffeners	@	.03	11.40	
550 lbs. shaped steel in bracing	@	.05	27.50	
140 lbs. 7/8″ round wrought iron rods in bracing	@	.05	7.00	
				702.50
Total Item No. 28				$2,985.96
Depreciation:				
Ave. age 16 yrs. Ave. life 25 yrs. Int. rate 4%. Annual Depreciation @ 2.31% = $68.98.				
Accrued Depreciation @ 52.4%				1,564.64
Net physical value				$1,421.32

Item No. 29. All Piping in Station.

(*a*) Water Pipes.

1—1½″ tap in C. I. mains	@	$1.50	$1.50
46′ 6″—1½″ W. I. screw pipe	@	.07	3.25
46′ 0″—1¼″ " " "	@	.06	2.76
Carry forward			$7.51

The Water Supply.—Continued.

760	Brought forward			87.51	
1—1½″	tee	@	$.09	.09	
4—1¼″	tees	@	.07	.28	
1—1½″	elbow	@	.06	.06	
7—1¼″	"	@	.05	.35	
4—1¼″	union	@	.14	.56	
2—1¼″	plugs	@	.02	.04	
1—1½″ x 1¼″	bushing	@	.03	.03	
1—1½″	plug valve	@	5.20	5.20	
4—1¼″	Jenkins globe valve	@	1.90	7.60	
2—1¼″	check valve	@	1.00	2.00	
	Cutting, threading and erecting above piping	@	10.00	10.00	
					33.72

(*b*) Steam Pipes.

30′ 4″—4″	extra heavy W. I. screw pipe	@	.38	11.52	
4—4″	elbows	@	.44	1.76	
1—4″	tee	@	.63	.63	
5—4″	flange unions	@	1.70	8.50	
1—5″ x 4″	reducing bushing	@	.51	.51	
1—5″	angle valve	@	21.00	21.00	
4—4″	globe valve, extra heavy (Crane #23)	@	23.00	92.00	
30′ 6″—5″	W. I. screw pipe, extra hvy	@	.53	16.16	
4—5″	elbows	@	.63	2.52	
1—5″	flanged union	@	1.90	1.90	
1—5″ x 4″	reducing coupling	@	1.25	1.25	
1—5″ x 4″	reducing elbow	@	.73	.73	
	Cutting, threading and erecting above piping	@	25.00	25.00	
					183.48

(c) Miscellaneous Small Pipe in Station.

43' 6"—1½" W. I. screw pipe	@	.07	3.05	
6' 0"—½" " " "	@	.02	.12	
6—1½" unions	@	.17	1.02	
4—½" "	@	.07	.28	
1—1½" tee	@	.09	.09	
3—½" "	@	.03	.09	
Carry forward			$4.65	$217.20
761 Brought forward				$217.20
Brought forward			$4.65	
1—1½" elbow	@	$.06	.06	
4—½" "	@	.02	.08	
1—1½" x 1– reducer	@	.15	.15	
2—1" nipples	@	.02	.04	
1—1½" Lunkenheimer globe valve	@	2.60	2.60	
1—1½" Jenkins " "	@	2.60	2.60	
1—1½" " angle "	@	2.60	2.60	
4—½" " globe "	@	.75	3.00	
2—1" corporation cocks	@	1.00	2.00	
1—1¼" plug valve	@	4.50	4.50	
2—1¼" elbows	@	.05	.10	
1—1¼" union	@	.14	.14	
Cutting, threading and erecting above piping	@	10.00	10.00	
				32.52

The Water Supply.—Continued.

(*d*) Suction Line for Pump.

5′ 0—10″ C. I. H. & S. pipe weighing 390 lbs.	@	1.75	8.75	
4′ 0″—8″ C. I. H. & S. pipe weighing 230 lbs.	@	1.50	6.00	
1—10″ 22½° bend, H. & S.	..	....	....	
1—10″ x 8″ reducer "	..	....	....	
1—8″ tee "	..	....	....	
1—8″ plug	..	....	....	
Approximate weight of above specials = 750 lbs.	@	.03	22.50	37.25

(*e*) Discharge Line for Pump.

32′—8″ C. I. H. & S. pipe, weight 0.9 tons	@	1.50	48.00	
1—8″ C. I. 45° bend—flange and spigot	..	....	.....	
1—8″ " " " —H. & S.	..	....	.....	
1—8″ " 90° " "	..	....	.....	
1—8″ " tee "	..	....	.....	
1—8″ x 10″ increaser "	..	....	.....	
1—8″ plug	..	....	.....	
Weight of above specials = 1,030#	@	.03	30.90	
1—8″ flanged check valve, set	@	23.00	23.00	
1—8″ Eddy gate valve, set	@	20.80	20.80	122.70
Carry forward—Total Item No. 39				$409.67

762	Brought forward—Total Item No. 29			$409.67
	Depreciation:			
	Ave. age 15 yrs. Ave. life 30 yrs. Int. rate 4%.			
	Annual Depreciation @ 1.714% = $7.02.			
	Accrued Depreciation @ 35.7%			146.25
	Net physical value			$263.42

Item. No. 30. Intake and Pipe Line to Pumping Station.

60 bd. ft. 2″ rough oak lumber	@	$60.00	$3.60	
1 perforated iron plate 30″ x 30″ x ⅛″, weighing 32 lbs.	@	.10	3.20	
135′ 0″—10″ C. I. H. & S. pipe, weighing 4.5 tons	@	27.90	119.97	
Laying 135 lin. ft. 10″ C. I. H. & S. pipe in 3′ trench	@	.45	60.75	
1—10″ 22½° H. & S. bend, weighing 202 lbs.	@	.03	6.06	
1—10″ foot valve, set	@	45.00	45.00	
				$238.58
Total Item No. 30				$238.58
Depreciation:				
Ave. age 23 yrs. Ave. life 50 yrs. Int. rate 4%.				
Annual Depreciation @ .63% = $1.50.				
Accrued Depreciation @ 24.0%				57.26
Net physical value				$181.32

The Water Supply.—Continued.

Item No. 31. Station Miscellaneous.

1—1 pint lubricator	@	$7.50	$7.50	
1—revolution counter on pump	@	15.00	15.00	
				$22.50
Total Item No. 31				$22.50
Depreciation:				
Ave. age 15 yrs. Ave. life 30 yrs. Int. rate 4%. Annual Depreciation @ 1.714% = $0.39.				
Accrued Depreciation @ 33.7%				8.03
Net physical value				$14.47

762½ *The Distribution System.*

763 Item No. 32. Cast Iron Street Mains.

1,271.8 tons of 6" to 10" C. I. H. & S. pipe	@	$25.40	$32,303.72	
392.5 tons of 3" and 4" C. I. H. & S. pipe	@	27.05	10,617.13	
2.5 tons of 4" C. I. H. & S. hydrant pipe	@	27.05	67.62	
				$43,988.47
				$43,988.47

Depreciation:

Ave. age 12 yrs. Ave. life 92 yrs. Int. rate 4%.
Annual Depreciation @ .107% = $47.07.

Accrued Depreciation @ 1.67%			734.61
Net physical value			$43,253.86

Item. No. 33. Cast Iron Specials in Street Mains.

32.11 tons of C. I. specials in street mains	@ 60.00	1,926.60	1,926.60

Depreciation:

Ave. age 12 yrs. Ave. life 92 yrs. Int. rate 4%.
Annual Depreciation @ .107% = $2.06.

Accrued Depreciation @ 1.67%			32.17
Net physical value			$1,894.43

The Water Supply.—Continued.

Item No. 34. Laying Cast Iron Street Mains.

Ordinary trenching including excavation, laying, yarn, lead and backfill. All pipes have 2 ft. cover, or depth of trench = 2½ ft.

15,350	lin. ft.	10"	C. I. pipe	@	$.28	4,298.00
11,840	"	8"	" "	@	.24	2,641.60
31,475	"	6"	" "	@	.20	6,295.00
28,336	"	4"	" "	@	.16	4,533.76
10,495	"	3"	" "	@	.15	1,574.25
225	"	4"	" hydrant pipe	@	.16	36.00
						19,578.61
			Carry forward—Total Item No. 34			$19,578.61
764			Brought forward—Total Item No. 34			$19,578.61
			Depreciation:			
			Ave. age 12 yrs. Ave. life 92 yrs. Int. rate 4%. Annual Depreciation @ .107% = $20.95.			
			Accrued Depreciation @ 1.67%			326.96
			Net physical value			$19,251.65

Item No. 35. Galvanized Iron Street Mains.

220	lin. ft.	2½"	galv. iron pipe	@	$.25	$55.00
2,950	"	2"	" "	@	.18	531.00

31,055	"	1½"	"	"	"	.....	@	.13	4,037.15	
19,615	"	1¼"	"	"	"	.....	@	.11	2,157.65	
4,470	"	1"	"	"	"	.....	@	.08	357.60	
7,115	"	¾"	"	"	"	.....	@	.05	375.75	
4,060	"	½"	"	"	"	.....	@	.04	162.40	
										7,676.55
Total Item No. 35										$7,676.55

Depreciation:

Ave. age 12 yrs. Ave. life 30 yrs. Int. rate 4%.
Annual Depreciation @ 1.71% = $131.27.

Accrued Depreciation @ 26.8%	2,057.32
Net physical value	$5,619.23

Item No. 36. Laying Galvanized Iron Street Mains.

Ordinary trenching including excavation, laying and backfill. Average depth of trench is 2 ft.

220	lin. ft.	2½"	galv.	iron	mains	.....	@	.14	30.80	
2,950	"	2"	"	"	"	.....	@	.13	383.50	
31,055	"	1½"	"	"	"	.....	@	.12	3,726.00	
19,615	"	1¼"	"	"	"	.....	@	.11	2,157.65	
4,470	"	1"	"	"	"	.....	@	.11	491.70	
7,115	"	¾"	"	"	"	.....	@	.10	711.50	
4,060	"	½"	"	"	"	.....	@	.10	406.00	
										$7,807.75
Carry forward										$7,907.75

The Water Supply.—Continued.

765	Brought forward—Total Item No. 36				$7,907.75
	Depreciation:				
	Ave. age 12 yrs. Ave. life 30 yrs. Int. rate 4%. Annual Depreciation @ 1.71% = $135.22.				
	Accrued Depreciation @ 26.8%				2,119.28
	Net physical value				$5,788.47

Item No. 37. Extra for Unusual Excavation.

Extra over and above ordinary excavation for trenches of an unusual character.

	Rock and Shale Trenches:				
1,285	cu. yds. solid rock excavation	@	$2.50	$3,212.50	
6,680	" shale excavation	@	1.00	6,680.00	
					$9,892.50
	Wet Trenches:				
1,830	lin. ft. of wet trench requiring constant pumping	@	.20	366.00	366.00
	Under Buildings:				
	Between Hardy Street and Roanoke street, the 4" line lies under two warehouses for a distance of 260 feet	@	5.00	5.00	5.00
	Total Item No. 37				$10,263.50

Depreciation:

Ave. age 12 yrs. Ave. life 92 yrs. Int. rate 4%.
Annual Depreciation @ .107% = $10.98.

Accrued Depreciation @ 1.67%		171.40
Net physical value		$10,092.10

Item No. 38. Steam Railroad Crossings.

Extra over and above the cost of ordinary trenching for pipe laid under the following railroad crossings.

766	Hardy Street near Roanoke Street:		
20 feet of 4" pipe in 5½ ft. trench under 1 track	@	$40.00	$40.00
	Pearis Street Crossing:		
212 feet of 8" pipe in 2 ft. to 8½ ft. trench under 9 tracks	@	200.00	200.00
	Thomas Street Crossing:		
220 feet of 4" main in 5 ft. trench (½ of which was solid rock) under 8 tracks	@	400.00	400.00
	Mercer Street Crossing:		
330 lin. ft. of 4" pipe in 5 ft. trench under 15 tracks and two masonry retaining walls 12 ft. thick at the base	@	425.00	425.00

The Water Supply.—Continued.

Logan Street Crossing:				
520 lin. ft. 6″ pipe in 5 ft. trench under 17 tracks	@	350.00	350.00	$1,415.00
Total Item No. 38				$1,415.00
Depreciation:				
Ave. age 12 yrs. Ave. life 92 yrs. Int. rate 4%. Annual Depreciation @ .107% = $1.51.				
Accrued Depreciation @ 1.67%				23.63
Net physical value				$1,391.37

Item No. 39. Street Railroad Crossings.

Extra over and above the cost of ordinary trenching for pipe laid under street railway tracks.

(*a*) Cast Iron Mains.

24 tracks crossed at right angle	@	$12.00	$288.00	
4 " " diagonally	@	17.00	68.00	
				356.00
Carry forward—Total (*a*)				$356.00

767	Brought forward—Total (*a*)			$356.00
	Depreciation:			
	Ave. age 12 yrs. Ave. life 92 yrs. Int. rate 4%. Annual Depreciation @ .107% = $0.38.			
	Accrued Depreciation @ 1.67%			5.95
	Net physical value			$350.05

(*b*) Galvanized Iron Mains.

4 tracks crossed at right angles	@ $12.00	$48.00	
2 " " diagonally	@ 17.00	34.00	
			82.00
Total (*b*)			$82.00
Depreciation:			
Ave. age 12 yrs. Ave. life 30 yrs. Int. rate 4%. Annual Depreciation @ 1.71% = $1.40.			
Accrued Depreciation @ 26.8%			21.98
Net physical value			$60.02

The Water Supply.—Continued.

Summary Item No. 39.

Cost of Reproduction				438.00
Annual Depreciation = $1.78.				
Accrued Depreciation				27.93
Net physical value				$410.07

Item No. 40. Cutting through Pavements over Mains.

Extra over and above the cost of ordinary trenching for cutting through pavements over mains.

(*a*) Cast Iron Mains.

19,965 lin. ft. of brick on 6" concrete base	@	$.70		$13,975.50
520 " " of granite on 6" base	@	.60		312.00
Carry forward				$14,287.50
Brought forward			$14,287.50	
6,490 lin. ft. of plain macadam pavement	@	$.15	973.50	
14,215 " " " 2" bitulithic macadam on 4" concrete base	@	.75	10,661.25	
3,730 lin. ft. of 8" water bound macadam	@	.20	746.00	
1,780 " " " parking	@	.10	178.00	
				$26,846.25
Total (*a*)				$26,846.25

Depreciation:

Ave. age 12 yrs. Ave. life 92 years. Int. rate 4%.
Annual Depreciation @ .107% = $28.72.

Accrued Depreciation	@	1.67%	.....	448.33
Net physical value				$26,397.92

(*b*) Galvanized Iron Mains.

835 lin. ft. of brick on 6" concrete base	@	$.70	$584.50	
925 " " " plain macadam	@	.14	138.75	
710 " " " 2" bitulithic macadam on 4" concrete base	@	.75	532.50	
25 lin. ft. of 8" water bound macadam	@	.20	5.00	
5,780 " " " parking	@	.10	578.00	
				$1,838.75
Total (*b*)				$1,838.75

Depreciation:

Ave. age 12 yrs. Ave. life 30 years. Int. rate 4%.
Annual Depreciation @ 1.71% = $31.44.

Accrued Depreciation	@	26.8%		492.78
Net physical value				$1,345.97

The Water Supply.—Continued.

Summary Item No. 40.

Cost of Reproduction			$28,685.00	
Annual Depreciation = $60.16.				
Accrued Depreciation			941.11	
Net physical value			$27,743.89	

769

Item No. 41. Valves on Mains.

6—10″ double gate valves	@	$27.00	$162.00	
23— 8″ " " "	@	18.90	434.70	
82— 6″ " " "	@	12.60	1,033.20	
63— 4″ " " "	@	7.65	481.95	
20— 3″ " " "	@	6.55	131.00	
1—8″ check valve	@	19.30	19.30	
1—6″ " "	@	12.80	12.80	
1—10″ Electro hydraulic gate valve	@	175.00	175.00	
1— 8″ " " gate valve	@	150.00	150.00	
1— 6″ " " " "	@	140.00	140.00	
199 valves distributed and set	@	2.00	398.00	$3,137.95
Total Item No. 41				$3,137.95

Depreciation:

Ave. age 12 yrs. Ave. life 50 yrs. Int. rate 4%.
Annual Depreciation @ .63% = $19.77.

Accrued Depreciation	@	9.8%	.....	307.52
Net physical value				$2,830.43

Item No. 42. Valve Boxes on Mains.

(*a*) Vaults for Electro-Hydraulic Valves.

(1) Cor. Pearis & Fourth Streets:

5 cu. yds. earth excavation	@	$.50	$2.50	
900 brick laid in cement mortar	@	20.00	18.00	
28 ft. 4″ x 4″ x 9.8# angles in roof weighing 274 lbs.	@	.05	13.70	
460 lbs. C. I. in frame and cover	@	.03	13.80	
15 ft. 4″ vitrified tile in 5′ trench	@	.40	6.00	
				$54.00

(2) Cor. Bland & Higginbotham Streets:

3 cu. yds. solid rock excavation	@	.50	1.50	
800 common red brick in cement mortar	@	20.00	16.00	
460 lbs. C. I. in cover and frame	@	.03	13.80	
				31.30
Carry forward				$85.30
770 Brought forward				$85.30

(3) On Princeton Ave., near Giles Street:

2½ cu. yds. earth excavation	@	$.50	$1.25	
820 common red brick in cement mortar	@	20.00	16.40	
460 lbs. C. I. cover and frame	@	.03	13.80	
20′—4″ vitrified tile in 3′ trench	@	.30	6.00	
				37.45

The Water Supply.—Continued.

(*b*) Cast Iron Valve Boxes.

188 C. I. valve boxes weighing 58 lbs., each, set	@	2.25	423.00	423.00
Total, Item No. 42				$545.75
Depreciation:				
Ave. age, 12 yrs. Ave. life, 50 yrs. Int. rate, 4%. Annual Depreciation @ .63%=$3.44.				
Accrued Depreciation @ 9.8%				53.48
Net physical value				$492.27

Item No. 43. Fire Hydrants.

15 4″ Eddy hydrants, 2 2½″ nozzles with barrel 3½ ft. long, distributed and set	@	$29.00	$435.00	$435.00
Depreciation:				
Ave. age, 12 yrs. Ave. life, 50 yrs. Int. rate, 4%. Annual Depreciation @ .63% = $2.74.				
Accrued Depreciation @ 9.8%				42.63
Net physical value				$392.37

1 6″ service consisting of 16′ of 6″ C. I. pipe, and 6″ gate valve in valve box	@	$29.00	$29.00	
3 4″ services each consisting of 16′ of 4″ C. I. pipe and 4″ gate valve in valve box	@	20.00	60.00	
2 3″ services, each consisting of 16′ of 3″ C. I. pipe and 3″ gate valve in curb box	@	16.50	33.00	
8 2″ services, each consisting of 16′ of 2″ galvanized pipe, corporation cock and gooseneck, curb cock and curb box	@	29.50	236.00	
3 1½″ services, each consisting of 16′ of 1½″ galvanized pipe, corporation cock and gooseneck, curb cock and curb box	@	20.00	60.00	
14 1″ services, each consisting of 16′ of 1″ galvanized pipe, corporation cock and gooseneck, curb cock and curb box	@	10.25	143.50	
2 3¾″ services, each consisting of 16′ of ¾″ galvanized pipe, corporation cock and gooseneck, curb cock and curb box	@	8.00	16.00	
1,564 ½″ services, each consisting of 16′ of ½″ galvanized pipe, corporation cock and gooseneck, curb cock and curb box	@	6.75	10,557.00	
637 ¼″ services, each consisting of 16′ of ½″ lead pipe, corporation cock, curb cock and curb box	@	8.00	5,096.00	
				$16,230.50

Unusual Excavation in Services:

Extra over and above the cost of ordinary trenching. Taken proportional to street mains, taking one service for every 75 feet.

Carry forward $16,230.50

The Water Supply.—Continued.

772	Brought forward				$16,230.50
275	cu. yds. solid rock excavation	@	$2.50	$687.50	
1,420	" shale excavation	@	1.00	1,420.00	
390	lin. ft. of wet trench	@	.20	78.00	
					2,185.50

Cutting through Pavement over Service Pipes:

Extra over and above the cost of ordinary trenching. Taken proportional to street mains, taking one service for every 75 feet of mains.

4,440	lin. ft. brick on 6" concrete base	@	.70	3,108.00	
110	" granite block on 6" concrete base	@	.60	66.00	
1,680	" plain macadam pavement	@	.15	252.00	
3,190	" 2" bitulithic macadam on 4" concrete base	@	.75	2,392.50	
800	" of 8" water bound macadam	@	.20	160.00	
					5,978.50
	Total Item No. 44				$24,394.50

Depreciation:

Ave. age 12 yrs. Ave. life 50 yrs. Int. rate 4%.
Annual Depreciation @ .63% = $153.69.

Accrued Depreciation @ 9.8%	2,390.66
Net physical value	$22,003.84

Item No. 45. Meters in Service.

1 4″ Gem	@	$100.00	100.00	
1 2″ Neptune (Compound)	@	45.00	45.00	
4 1″ Neptune	@	16.80	67.20	
6 2″ Nash	@	50.00	300.00	
1 1½″ Lambert	@	30.00	30.00	
1 ¾″ Neptune	@	12.40	12.40	
1 1″ Keystone	@	16.80	16.80	
179 ⅛″ Empire	@	12.40	2,219.60	
347 ½″ Neptune	@	7.30	2,533.10	
8 ½″ Crown	@	12.40	99.20	
1 1″ Lambert	@	12.40	12.40	
389 ½″ Niagara	@	6.00	2,334.00	
265 ½″ Keystone	@	8.40	2,226.00	
12 ½″ Hersey	@	12.40	148.80	
Carry forward			$10,144.50	
773 Brought forward			$10,144.50	
1—1″ Nash	@	$16.40	16.40	
100—½″ “	@	8.50	850.00	
1—½″ Standard	@	8.40	8.40	
149—½″ Gamon	@	7.20	1,072.80	
1,467 meters distributed and set	@	1.50	2,200.50	
				$14,292.60
Total Item No. 45				$14,292.60

The Water Supply.—Continued.

Depreciation:

Annual Depreciation @ 3.23% = $461.65.

Accrued Depreciation @ 25%				3,573.15
Net physical value				$10,719.45

Item No. 46. Meter Boxes and Vaults.

1,458 standard meter boxes, set	@	$4.50	$6,561.00	$6,561.00
1 meter box consisting of one joint of 18" vitrified tile with no bell, and a C. I. cover and ring weighing 65 lbs.	@	3.00	3.00	3.00
1 meter vault on gravity spring line, as follows:				
11 cu. yds. earth excavation	@	.50	5.50	
5 " concrete in walls and roof	@	20.00	100.00	
635 lbs. ¾" round rods	@	.03	19.05	
3 C. I. extra heavy meter box covers, approximate weight 100 lbs. each	@	3.00	9.00	
21 ft. 6" vit. tile in 3' trench	@	.30	6.30	
10' 0"—6" C. I. H. & S. pipe weighing 330 lbs	@	.50	5.00	
20' 0"—6" W. I. screw pipe	@	.50	10.00	
2—6" C. I. Y branches, weight 362 lbs.	@	.03	10.86	
2—6" C. I. 45° bends, weight 210 lbs.	@	.03	6.30	
12—6" x 2" C. I. tees for screw pipe	@	1.45	17.40	
6—2" companion flanges	@	1.00	6.00	
Carry forward			$195.41	$6,564.00

774 **Brought forward**			$195.41	$6,564.00
24—2″ elbows	@	$.09	2.16	
36—2″ nipples	@	.06	2.16	
2—6″ plugs	@	1.00	2.00	
3—6″ gate valves, set	@	13.60	40.80	
6—2″ fish traps	@	2.00	12.00	
				254.53
1 brick meter vault (N. & W. R. R. 6n Hardy St.):				
2 cu. yds. excavation (earth)	@	.50	1.00	
640 common red brick in cement mortar	@	20.00	12.80	
35 bd. ft. 2″ oak plank	@	60.00	2.10	
				15.90
1 brick meter vault (Matz Hotel):				
4 cu. yds. earth excavation	@	.50	2.00	
900 common red brick in cement mortar	@	20.00	18.00	
1 C. I. frame and cover, weighing 640 lbs.	@	.03	13.20	
				33.20
1 brick meter vault (Pocahontas Coal Company):				
2 cu. yds. earth excavation	@	.50	1.00	
450 common red brick in cement mortar	@	20.00	9.00	
1 C. I. frame and cover, weighing 600 lbs.	@	.03	18.00	
				28.00
434 meter boxes placed in concrete sidewalks	@	1.50	651.00	651.00
Total Item No. 46				$7,546.63

The Water Supply.—Continued.

Depreciation:

Ave. age 12 yrs. Ave. life 50 yrs. Int. rate 4%.
Annual Depreciation @ .63%=$47.54.

Accrued Depreciation @ 9.8%				739.57
Net physical value				$6,807.06

775 Item No. 47. Twin Tanks.

Excavation for Site of Tanks:

1,198 cu. yds. hard shale excavation	@	$1.00	$1,198.00	
1,765 " " " " (for future tanks)	@	1.00	1,765.00	
				$2,963.00

Foundation for 2 Tanks:

315 cu. yds. of concrete	@	7.00	2,205.00	2,205.00

Material in 2 Tanks:

486,000 lbs. steel in tanks	@	.05	24,300.00	
38,400 " " " roof trusses	@	.05	1,920.00	
5,500 bd. ft. of lumber in sheathing and purlins	@	50.00	275.00	
166 squares tar paper	@	1.50	249.00	
				26,744.00

Piping and Drains:				
Overflow Drain for 2 Tanks:				
88′ 0″—12″ vitrified tile, laid	@	.50	44.00	
2 12″ " " tees "	@	1.00	8.00	
				52.00
Overflow for 2 Tanks:				
122′ 0″—12″ C. I. flanged pipe, weighing 9,340 lbs.	@	.05	467.00	
2 12″ C. I. flanged elbows, weighing 580 lbs.	@	.05	29.00	
				496.00
Washout for 2 Tanks:				
28′ 0″—12″ C. I. flanged pipe, weighing 2,140 lbs.	@	.05	107.00	
2 12″ C. I. flanged elbows, weighing 580 lbs.	@	.05	29.00	
2 12″ C. I. flanged gate valves, set	@	38.00	76.00	
				212.00
Supply for 2 Tanks:				
30′ 0″—10″ C. I. flanged pipe, weighing 1,770 lbs.	@	.05	88.50	
Carry forward			$88.50	$32,672.00
776 Brought forward				$32,672.00
Brought forward			$88.50	
2 10″ C. I. flanged elbows.				
2 10″ " H. & S. "Y" branches.				
1 10″ " plug.				
Approximate weight of above specials=1,320 lbs.	@	$.04½	59.40	
2 10″ C. I. gate valves, set	@	29.00	58.00	
				205.90

Painting:				
31,400 sq. ft. of two coat painting	@	.02	628.00	628.00
Total for Item No. 47				$33,503.90
Depreciation:				
Ave. age 9 yrs. Ave. life 30 yrs. Int. rate 4%. Annual Depreciation @ 1.71%=$572.95.				
Accrued Depreciation @ 18.9%				6,332.62
Net physical value				$27,173.28
Item No. 48. Bland Street Tank.				
1,110 cu. yds. shale excavation	@	$1.00	$1,110.00	
180 " stone masonry in foundation	@@	7.00	1,260.00	
70,000 lbs. of steel in tank	@@	.05	3,500.00	
6 cu. yds. concrete in retaining walls	@	10.00	60.00	$5,930.00
Piping and Drains:				
Overflow and Drain:				
36′ 0″—10″ C. I. flanged pipe weighing 2,120 lbs	@	.05	106.00	
1 10″ C. I. flanged elbow, weighing 210 lbs	@	.05	10.50	
15′ 0″—12″ vit. tile in 2′ trench	@	.50	7.50	
220′ 0″—10″ " " " 2′ "	@	.40	88.00	212.00
Carry forward				$6,142.00

777	**Brought forward**				$6,142.00
	Piping:				
	278′ 0″—10″ C. I. H. & S. pipe weighing 8.88 tons	@	$27.40	$243.31	
	Laying 278′ of 10″ C. I. H. & S. pipe	@	.35	97.30	
	10′ 0″—12″ C. I. flanged pipe, weighing 764 lbs.	@	.05	38.20	
	330′ 0″—6″ C. I. H. & S. pipe weighing 5.5 tons	@	27.40	150.70	
	Laying 330′ of 6″ C. I. H. & S. pipe	@	.25	82.50	
	1 10″ x 12″ C. I. increaser.				
	2 10″ x 6″ " " tees.				
	1 10″ x 8″ " " "Y" branch.				
	1 12″ C. I. elbow.				
	5 6″ " " "				
	1 6″ " " " 45° bend.				
	Approximate weight of above specials = 2,522 lbs.	@	.03	75.66	
	3 10″ gate valve, set	@	29.00	87.00	
	2 6″ " " "	@	13.60	27.20	
					801.87
	Total Item No. 48				$6,943.87
	Depreciation:				
	Ave. age 23 yrs. Ave. life 30 yrs. Int. rate 4%.				
	Annual Depreciation @ 1.71% = $118.74.				
	Accrued Depreciation @ 65.3%				4,534.35
	Net physical value				$2,409.52

The Water Supply.—Continued.

Item No. 49. Electric Transmission Line.

55 30′ poles	@	5.00	275.00	
58 2 pin cross arms	@	.30	17.40	
130 pins	@	.10	13.00	
130 glass insulators	@	.07	9.10	
42 24″ galv. iron cross arm braces	@	.10	4.20	
510 lbs. No. 12 B. & S. gage copper clad wire	@	.25	127.50	
20 dry batteries	@	.35	7.00	
Labor erecting line	@	200.00	200.00	
				$653.20
Carry forward. Total Item No. 49				$653.20
778 Brought forward. Total Item No. 49				$653.20
Depreciation:				
Ave. age 2 yrs. Ave. life 25 yrs. Int. Rate 4%. Annual Depreciation @ 2.31% = $15.09.				
Accrued Depreciation @ 4.9%				32.01
Net physical value				$621.19

778½ *Miscellaneous.*

779 Item No. 50. Inventory of Laboratory Equipment.

Includes all apparatus and chemicals in the laboratory.

Present worth $250.00

Item No. 51. Inventory of Office Furnishings.

Includes all furnishings in the office building.

Present worth $1,100.00

Item No. 52. Inventory of Materials & Supplies.

Includes all tools, supplies, vehicles, pipe, etc., at the Ada Pumping Station, in the pipe yard and in the meter shop.

Present worth $8,100.00

Item No. 53. Cost of Engineering and Superintending.

These costs to begin with the surveys and preparations of such detailed plans as are finally agreed upon in the franchise requirements, and end with the completing and placing of the plant in operation.

It covers the following items:

(*a*) Salary and Expenses of Superintendent and Engineering Force.
(*b*) Preparation of Detailed Plans.
(*c*) Preparation of Specifications.
(*d*) Preparation and Letting of Contracts.
(*e*) Setting of Lines and Grades.
(*f*) Inspection of Work.
(*g*) Estimates of Contractor.
(*h*) Purchase of Material and Supervision of Labor where it is not contracted.
(*i*) Final Tests and Adjustment of Contracts.
(*j*) The placing of the Plant in Successful Operation.

780 And, in general, all the ordinary engineering, superintendence and technical management of the construction.

This item is taken at 5% of items Nos. 3 to 52 inclusive, and amounts to $22,395.00

Annual Depreciation = $150.00.

Accrued Depreciation 1,880.00

Net physical value $20,515.00

Item No. 54. General Administrative and Legal Costs.

Including the salaries and expenses of the Company's Officers, Accountants and Attorneys during the period of construction, commencing at the end of the time covered by Preliminary Costs, and continuing to the time when the plant is put in successful operation.

These costs include:

(*a*) Salaries of General Officers.
(*b*) Salaries and Expenses of Office Assistants.
(*c*) Cost of Accounting.
(*d*) Legal Advice.
(*e*) Rent and Office Expense.

This item is taken at 2% of items Nos. 3 to 52 inclusive, and amounts to..... $8,960.00

Annual Depreciation = $60.00.

Accrued Depreciation 755.00

Net physical value..... $8,205.00

781 Item No. 55. General Contingent Costs During Construction.

Being all costs growing out of omissions or unforeseen changes or events during construction.

This item includes:

(*a*) Changes in Construction due to Unforeseen Obstacles developed during the Progress of the Work.
(*b*) Rise in Prices of Material or Labor above Normal.
(*c*) Financial Panics.
(*d*) Inclement Weather causing Delays.
(*e*) Floods causing both an Actual Property Loss and Unavoidable Delays.
(*f*) Failure of Contractors.
(*g*) Especial Unforeseen Difficulties encountered in deep Excavations.
(*h*) Strikes.
(*i*) Litigations.
(*j*) Taxes and Assessments on Real Estate and Personal Property for One Year.
(*k*) Insurance.

And, in general, all costs which experience has shown must be allowed for by a prudent man engaging in a large constructive enterprise over and above that which can be specifically enumerated.

This item is taken at 4% of items Nos. 3 to 52 inclusive, and amounts to	$17,920.00
Annual Depreciation = $120.00	1,505.00
Net physical value	$16,415.00

Item No. 56. Interest During the Construction Period.

The interest lost during construction due to the withdrawal of funds from channels where they are earning return and placing them in a "building" property which cannot earn until
782 ready to operate is composed of the losses from:

1st. Moneys invested in real estate.
2nd. Moneys invested in the property other than real estate.

Interest on Real Estate Investment:

The money expended for real estate must necessarily be available early in the construction period, as one of the first steps after the preliminary studies have been made and the source of water supply and character of its development decided upon, is to purchase the necessary real estate; consequently the money expended for real estate is placed in a non-productive investment until the plant begins to operate.

Interest on Property Other Than Real Estate:

The interest lost due to investment in the property other than real estate depends upon the order of construction or the rate at which the construction requires money and the length of time it lies unproductive. In this case it is assumed that the physical plant would be built in one year, so that operation would begin January 1st, 1916.

Order of Construction:

783 I have, therefore, developed a program of construction which would logically be followed in duplicating the properties of the Bluefield Water Works & Improvement Company. It is assumed that the plant would be first thought of on January 1st, 1915, (the date of this valuation) and definite steps toward a water works taken at that time.

Engineering advice would be called to report upon the most practicable methods of supplying the city with an adequate amount of pure water. The report would show the relative first and annual costs of the several plans considered in such a manner to enable investors to judge as to the best procedure. The plan having been selected, the project would be financed, passage of necessary franchises secured and detailed plans drawn up. This would require at least four months so that it would be May 1st before contracts could be

advertised and let. By this time the necessary real estate would be purchased.

Construction on the springs and pipe lines to the city would be started immediately and it is estimated that this work would progress uniformly until completion late in the year. The work on the distribution system and pumping stations would begin in June.

784 As soon as the progress on the station buildings would permit, the machinery could be installed, and it is considered that the work on pipe system and tanks, as well as the installation of pumps, boilers and piping would be completed late in December, so that the entire plant would be thrown into operation on January 1st, 1916.

Many consumers would attach services to the mains as they were laid and when the plant began to operate, 500 would be ready to take water. The remainder would connect rapidly as shown in Table No. 3, Item No. 57, following. It is assumed that on January 1st, 1920, the new plant will be identical with the existing plant both in physical structure and earnings.

Table "A" shows the investment in the several parts of the physical plant.

TABLE "A."

Investment in Comparative Plant.

Preliminary Cost	$14,455
Real Estate, Improvements and Rights of Way	33,984
Water Supply	161,940
Pumping Station	49,980
Distribution system including tanks	188,893
Miscellaneous Equipment and Supplies	9,450
Engineering, Legal Costs and Contingencies	45,135
Total Amount of Investment	$503,817

785 The amounts in this table are the estimated present worth of the various parts of the physical plant. Interest during construction and going value have yet to be computed.

In Table "B" is shown the interest lost during the construction of the properties of the Bluefield Water Works and Improvement Company, based directly upon the assumption made as to the order of construction as outlined above, and on the further assumption that the dividing line for the charges for loss of interest on construction account and on operating account is drawn at the point of completion and putting into operation of the plant on January 1st, 1916.

TABLE "B."

Date, December 31, 1915.

Total amount expended during year (Net Physical Value, exclusive of Going Value and Interest Lost During Construction)		$503,817
Average amount on which interest is chargeable to capital account for one full year	$251,908	
Interest on $251,908 @ 6%		15,114
Total amount expended (Net Physical Value and Interest During Construction, Exclusive of Going Value)		$518,931

786 Item No. 57. Going Concern Value.

Going value may be defined as "The Cost of Financing a Physical Plant into the Possession of an Adequate Income."

The computation of the amount of "going value" possessed by a given plant involves the recreation of the income of the existing plant; starting at the date of the valuation of the property, the appraiser must carry through the financial transaction involved in planning and construction a plant duplicating the present plant in every way, including its ability to earn a fair rate of return by reason of its being an established and "going" property. It has not only the ability to earn, but actually has consumers and is earning, thus having an added value over a new plant identical physically, but just completed and with no consumers.

It is perfectly obvious that any thinking investor would prefer to own, and be willing to pay more for the going plant than for the newly completed plant without a business. The question is, how shall that added value be measured? If the value of the plant is measured by the cost of duplication less depreciation, why not measure the value of the developed business by the cost of reproducing that business in a way humanly possible? This method of
787 computation has been accepted by the courts and numerous appraisal boards, and has been followed in this report.

A more detailed discussion of going value is included in the report preceding the reproduction estimates.

TABLE NO. 1.

General Statistics Relating to the Bluefield Water Works and Improvement Company.

	Year ending.	
	Dec. 31, 1914.	Dec. 31, 1920.
Population Served	14,500	18,800
Live Services	2,234	3,100
Consumption (Annual Million Gallons)	317	435
Gross Income	$39,802	$47,000
" " per tap	17.85	15.20
" " " million gallons	126.00	108.00
Gross Income, exclusive Hydrant Rentals	$36,660	$43,500
Gross Income, exclusive Hydrant Rentals per tap	16.50	14.05
Gross Income, exclusive Hydrant Rentals per M. G.	116.00	100.00
Cost of Operation Exclusive of Fixed Charges and Depreciation	$19,973	$25,000
Per Tap	8.95	8.05
Per million gallons	63.20	57.50
Per cent of gross income	50.1	53.1
Net Income exclusive of Fixed Charges and Depreciation	$19,829	$22,000
Per Tap	8.90	7.15
" million gallons	62.80	50.50
" cent of gross income	49.9	46.9
Hydrant Rental	$3,142	$3,500

(Here follows diagram marked page 788.)

789 The cost of reproducing the physical property of the Bluefield Water Works and Improvement Company has been found herein to be $503,817. To this amount has been added $15,114 for "Lost Interest During Construction" as computed in Item No. 56.

Going Value Computations:

Date of valuation, January 1st, 1915.

The physical plant was inventoried as of January 1st, 1915, and the values of the separate parts determined as outlined in the report under "Unit Prices."

Construction and Going Value Development Periods:

It is assumed that at least one year, or until January 1st, 1916, would be required to build a new comparative plant identical, physically, with the existing plant as of January 1st, 1915. It is further assumed that five years, or four years in addition to the construction period would be the least possible time required by the comparative plant to develop an income identical with that of the existing plant.

Operations of Existing Plant:

In Table No. 2 are shown the forecasted operating statistics of the existing plant during the construction and going value development periods of the comparative plant. This forecast is based upon a careful study of the past growth in income and expenses of operation of the water works property.

790 TABLE No. 2.

Existing Plant.

Annual Income and Operating Expense.

Year ending Dec. 31st.	Gross income.	Operation, maintenance, and taxes.	Net income exclusive of depreciation and fixed charges.	Depreciation.	Net income applicable to fixed charges & dividends.
1915.....	$41,000	$20,800	$20,200	$5,150	$15,050
1916.....	42,200	21,640	20,560	5,250	15,310
1917.....	43,400	22,480	20,920	5,350	15,570
1918.....	44,600	23,320	21,280	5,450	15,830
1919.....	45,800	24,160	21,640	5,550	16,090
1920.....	47,000	25,000	22,000	5,650	16,350

Operations of Comparative Plant:

The largest consumers will be the first to avail themselves of the use of pure water under pressure, and the consumption per consumer will, therefore, be high during the early years of operation. The revenue per million gallons will be low at first, as the largest consumers pay the lowest rate.

During the past year the twenty-five largest consumers used over thirty-three million gallons of water, and paid $6,594 revenue to the Water Company at an average rate of $196 per million gallons of water actually metered to them. They paid an average annual revenue of $264 each.

The remaining small consumers paid an average of $13.80 each, and the average for all the consumers was $16.50. The aver-
791 age rate paid for all the water pumped in 1914 was $116.00 per million gallons. This rate is low on account of being based on the gross pumpage which includes slip of pumps, leaks in mains, waste and other water unaccounted for.

The following table shows the estimated domestic income of the comparative plant.

TABLE NO. 3.

Domestic Income of Comparative Plant.

Period.	No. of consumers.	Rate per consumer.	Revenue.	Revenue for year.
Entire Year 1916.....	500	$20.00	$10,005	.....
Half Year 1916.....	1,200	6.80	8,150	$18,155
Entire Year 1917.....	1,700	15.40	26,305	.....
Half Year 1917.....	625	6.80	4,120	$30,425
Entire Year 1918.....	2,325	14.80	34,545	.....
Half Year 1918.....	375	6.55	2,450	$36,995
Entire Year 1919.....	2,700	14.60	39,446	.....
Half Year 1919.....	250	6.45	1,555	$41,000
Entire Year 1920.....	2,950	14.45	42,555	.....
Half Year 1920.....	150	6.30	945	$43,500

Operating Expenses of Comparative Plant:

The operating expenses of the existing plant were $63.20 per million gallons pumped in 1914. (Depreciation and fixed charges excluded) and it is estimated that these expenses will be decreased so as to become $57.50 for the year 1920. For the comparative plant the cost of operation will not be materially higher during the early years of operation on account of the rapidity with which con-
792 sumers connect their services to the mains, necessitating a comparatively large pumpage.

The average rate of domestic revenue received for all water pumped in 1914 was $116.00 per million gallons. This has been estimated to decrease to $100 per million gallons pumped in 1920. With a knowledge of the income and operating statistics of the present plant, I have estimated the income and operating costs of the comparative plant as shown in Table No. 4.

TABLE No. 4.

Annual Operating Expenses of Comparative Plant.

(Going Plant Pumpage Estimated to be 435 M. G. in 1920.)

Year ending Dec. 31.	Estimated domestic revenue.	Income per M. G. pumped.	M. G. pumped annually.	Operating cost per M. G.	Annual operating expense.
1916.....	$18,155	$72.40	250	$63.25	$15,800
1917.....	30,425	86.80	350	60.00	21,000
1918.....	36,995	96.10	385	59.00	22,700
1919.....	41,000	99.25	414	58.00	24,000
1920.....	43,500	100.00	435	57.50	25,000

From the data in Tables No. 3 and No. 4, a summarized table of operations of the comparative plant has been made. These data are shown in Table No. 5. No allowance has been made in this table for income from unemployed capital.

793 TABLE No. 5.

Annual Income and Expense of Comparative Plant.

Year ending Dec. 31.	Gross income.	Operation, maintenance, and taxes.	Net income excl. of depreciation and fixed charges.	Depreciation.	Net income applicable to fixed charges & dividends.
1915.....	0	0	0	0	0
1916.....	$21,415	$15,800	$5,615	$5,250	$365
1917.....	33,745	21,000	12,745	5,350	7,395
1918.....	40,375	22,700	17,675	5,450	12,225
1919.....	44,340	24,000	20,340	5,550	14,790
1920.....	47,000	25,000	22,000	5,650	16,350

Income on Unemployed Capital:

In Table No. 6 is shown the computation relating to the income on unemployed capital. It must be remembered that in this method of computing going value, the appraiser should consider himself at the parting of the ways, with an amount of capital in hand sufficient to buy the existing plant (covering in the cost thereof the physical plant, lost interest during construction and going value) and follow through the steps relating to the investment in the comparative plant which a capitalist would take, and the return he would get in the form of interest on his unemployed capital.

It is assumed that he could place idle funds at a 4% rate, except as to the funds required for the year's construction on which the bank rate of interest is assumed to be 2%. It is further assume-
794 that on money expended during the year, the bank would allow him six months' interest at 2%, corresponding to a 2% rate on average bank balance throughout the year.

The comparative physical plant has a value of $503,817, and the lost interest during construction amounts to $15,114, so that the total investment, including the loss of interest, is $518,931. The going value being unknown, must be determined by a series of approximate computations. Only the final adjustment is shown in these tables.

The plant is assumed to have a going value of $16,328. On this assumption the total value (or cost to the investor) of the existing plant is as follows:

Physical Plant	$503,817
Lost Interest during Construction	15,114
Going Value	16,328
Total Value	$535,259

Therefore, the investor who has concluded to build a new hypothetical plant, instead of to purchase the old plant, is assumed to have in hand the sum of $535,259 as of January 1, 1915. He is further assumed to adopt the same order of construction for the new comparative plant as shown in Table "A", Item No. 56. Under these assumptions Tables Nos. 6 and 7 result.

TABLE No. 6.

Final Computation of Net Annual Income (from Operation and from Interest on Unemployed Capital of Comparative Plant.

Assumed Capital in Hands of the Investor-Builder on January 1, 1915.

Value of Physical Plant	$503,817
Interest during Construction (Table 3)	15,114
Assumed Going Value	16,328
Total	$535,259

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
		Determination of interest on unemployed capital of comparative plant.									
Year ending Dec. 31.	Net income from operation. See col. 6, Table 5.	Total investment to date in comp. (phys.) plant & interest during constr.	Going value.	Total assumed investment to date, col. 3 + col. 4.	Amount invested which is earning 4%.	Amount withdrawn for construction during year.*	One year's interest on— Col. 6 @ 4%.	One year's interest on— Half of col. 7 @ 2%.	Total interest, col. 8 + col. 9.	Lost interest during constr.	Total annual income or return on comp. plant, col. 2 + col. 10 & 11.
1915.....	0	$518,931	0	$518,931	$16,328	$518,931	$653	$5,189	$5,842	$15,114	$20,956
1916.....	$365	518,931	—$6,260	512,671	22,588	—6,260	904	—63	841	15,114	1,206
1917.....	7,396	518,931	6,293	525,224	10,035	12,553	401	126	527	15,114	7,922
1918.....	12,225	518,931	12,714	531,645	3,614	6,421	145	64	209	15,114	12,434
1919.....	14,790	518,931	15,404	534,335	924	2,690	37	27	64	15,114	14,854
1920.....	16,350	518,931	16,328	535,259	0	924	0	0	0	15,114	16,350

*To cover physical plant, interest during construction, and going value.

796

TABLE No. 7.

Final Going Value Computation as of January 1st, 1915.

1.	2.	3.	4.	5.	6.	7.	8.
	Total net return.			Present worth of excess earning of existing over comparative plant.			
Year ending Dec. 31st.	Existing plant.	Comparative plant.	Excess of existing plant.	Period of years.	Factor at 6%.	Amounts.	Cumulative amounts.
1915	$15,050	$20,956	—$5,906	1	1.06	—$6,260	—$6,260
1916	15,310	1,206	14,104	2	.889996	12,553	6,293
1917	15,570	7,922	7,648	3	.839619	6,421	12,714
1918	15,830	12,434	3,396	4	.792094	2,690	15,404
1919	16,090	14,854	1,236	5	.747258	924	16,328
1920	16,350	16,350	0	6	.704961	0	16,328
Resulting Going Value	$16,328						
Assumed Going Value	16,328						
Error on Final Computation	0						

797 The going value ($16,328) estimated in this item is based upon the assumption that the present rate of return will prevail throughout the going value development period, that is, to January 1st, 1920. This rate of return after allowing 1% per annum for depreciation is *is* 2.7% upon the value found herein, which is far too low to attract capital into an investment of this character.

As a matter of interest and further information, I have estimated the going value based upon a fair rate of return of 7% upon the value found herein (after allowing 1% per annum for depreciation) and find the amount under this assumption to be $59,940.

Item No. 58. Operating Capital.

This includes such cash on hand as may be necessary to conduct the business of this company, and which cannot be withdrawn or used for other purposes. The amount allowed for this item is approximately three months' general operating expense, $5,000.00.

798 APPENDIX.

(Here follow diagrams marked pages 798*a*, 799, 800, and 801.)

Bluefield Water Works & Improvement Co., Bluefield, W. Va.

Year ending Dec. 31st.	1909.	1910.	1911.	1912.	1913.	1914.
Gross Income	$25,361.66	$31,483.48	$35,727.99	$33,766.52	$36,031.91	$39,801.88
Fixture Rates	8,540.71	9,326.72	10,973.13	12,013.37	7,889.32	8,167.08
Meter Services	15,463.95	20,656.76	23,179.86	20,103.15	26,492.59	28,492.30
Public Hydrants	1,357.50	1,500.00	1,575.00	1,650.00	1,650.00	3,142.50
Total Income	$25,361.66	$31,483.48	$35,727.99	$33,766.52	$36,031.91	$39,801.88
Total cost excl. taxes, dep. and fixed charges	9,175.67	15,153.42	13,474.49	15,086.21	12,819.87	17,524.78
Add Taxes	2,369.03	1,994.15	2,085.23	2,069.18	2,202.53	2,448.57
Total cost excl. deprec. and fixed charges	11,544.70	17,147.57	15,559.82	17,155.39	15,022.40	19,973.35
Add Depreciation	6,859.99	6,617.84	6,243.00	4,317.29	8,141.42	4,557.87
Total cost excl. fix. chgs	18,404.69	23,765.41	21,802.82	21,472.68	23,163.82	24,531.22
Add Fixed Charges	4,091.17	3,944.55	4,515.10	3,434.53	7,841.39	6,060.02
Total Cost of Oper., Maint., Taxes, Deprec. and Fixed Charges	22,495.86	27,709.96	26,317.92	24,907.21	31,005.21	30,591.24

802½ *Preliminary Estimates for Water Supply, Bluefield, West Va., as Bearing on the Value of Water from the Springs of the Bluefield Water Works & Improvement Co.*

February, 1916.

John W. Alvord and Chas. B. Burdick,

Hydraulic and Sanitary Engineers,

Hartford Building,

Chicago.

Sanders & Crockett.

803 *Preliminary Estimates for Water Supply, Bluefield, West Va., as Bearing on the Value of Water from the Springs of the Bluefield Water Works & Improvement Co.*

In order to throw some light on the value of the springs owned by the Bluefield Water Works and Improvement Company, it is desirable to determine whether or not these springs have a special value as a source of supply in addition to the value of the real estate and the cost of development.

That portion of the value of the springs which is due to the land value and development can be readily estimated in the usual way, but the determination of special value, if there is any, resulting from their ability to furnish water at a lower cost than any other source, requires special consideration and analysis.

The questions then to be answered in connection with these springs are:

First. Have the springs any special value above the land value and cost of development?

Second. If they have a special value, how to determine the amount and its distribution?

804 Have the Springs a Special Value?

In order to properly answer this question, it is desirable to know the cost of water delivered at the twin tanks from the cheapest available source of supply, other than the present supply. This cost in each case is made up of interest on first cost, depreciation, and operating expense. If the cost of water under the cheapest other available supply is greater than the comparable cost from the present source of supply, then it must be true that the springs now owned and operated by the Bluefield Water Works & Improvement Company must have some special value above that of the land and development cost. It also follows that if water can be obtained from a new source

at a less cost than from the present source, the springs have no special value, and are worth perhaps even less than the value of the land and cost of development.

In order to determine the cheapest source of supply other than the present source, I have estimated the cost per million gallons of an equivalent amount of water, delivered to the twin tanks, from the three most known practicable sources, namely, the Bluestone River, Mud Fork, and Brushy Fork. The Bluestone supply involves the impounding of water by a storage dam above Graham, a distance of four miles from the tanks and at an elevation approximately 400 feet below the tanks. The Mud and Brushy Fork supplies each require a storage dam near Falls Mills, distance of five and four and a quarter miles, respectively, from the tanks. In each case the plant would necessarily include filtration works to make
805 the character of the water comparable with the existing supply, involving an investment cost and operating cost that are not incurred in the present plant.

Of the three above sources of supply, the Bluestone River supply is found upon examination to be the most desirable and economical, inasmuch as it is less expensive than either the Mud Fork or Brushy Fork sources, and being supported by a larger watershed, requires less storage. Its drainage area is 17 square miles, largely from East River mountain, while those of the Mud Fork and Brushy Fork are 14 and 11 square miles, respectively. Mud Fork is, I am informed, already preempted in large part by the N. & W. Ry.

It is assumed that the average yield of a watershed in this locality may be developed to as much as 500,000 gallons per square mile per day with a sufficient storage and impounding reservoir. Ample supply is therefore available at this site.

In the following table is shown preliminary estimates on the investment costs of the three above described new available sources of supply, followed by a comparison of cost per million gallons of water at the twin tanks between the cheapest of these three sources and the present supply.

806	Bluestone River.	Mud fork.	Brushy fork.
16" Pipe @ $2.50 per lin. ft. complete, including laying, rock excavation, valves, etc.....	$52,640	$65,900	$56,000
2 Pumps, 1½ Mil. Gals. each..	15,000	15,000	15,000
Boilers, 300 H. P. including piping and fittings.....	6,000	6,000	6,000
All piping and auxiliaries in station	5,500	5,500	5,500
Stack	3,300	3,300	3,300
Underground piping	3,750	3,750	3,750
Station Building and Improvements	16,000	16,000	16,000
Filtration Plant, 2 M. G. Cap., complete	30,000	30,000	30,000
Land, 75 acres @ $200.00.....	15,000	15,000	15,000
Dam	65,000	65,000	65,000
Eng. Franchises, Preliminary Cost, etc. @ 15%	31,950	33,800	32,350
Investment cost total plant	$244,140	$259,250	$247,900

Since the investment cost on the Bluestone supply is less than either of the other two, and also since the head to be pumped against is less than either Mud Fork or Brushy Fork, it is at once seen that the cost of pumping, investment charge, and annual depreciation, and size of drainage area, all point in favor of the Bluestone River as the best and cheapest source of supply for comparison with the present supply. Since this is true, we can neglect the Mud Fork and Brushy Fork projects from further consideration, and deal only with the Bluestone project.

807 Cost of Spring Supply.

The cost of the present source of supply has been estimated in the detailed estimates of the Report on the Value of the Entire Plant, and is here summarized, as follows:

Real Estate and Easements.....	$33,964
Water Supply Development, Pipe Lines, etc.....	115,140
Pumping Stations	59,988
Engineering, Preliminary Costs, etc. @ 15%.....	31,500
Total investment cost.....	$240,592

It is also necessary, in connection with the cost of each source of supply, to estimate the depreciation, the cost of pumping for the present plant, and cost of pumping and filtration for the new plant. An outline of these estimates is as follows:

Cost of Pumping and Filtration—New Plant at Bluestone River.

Assumed station duty = 40,000,000 ft. lbs. per 1,000 lbs. of dry steam.
Average daily pumpage, 870,000 gallons.
Foot lbs. daily = 870,000 x 8.3 x 425 = 3,100,000,000.

$$1{,}000 \times \frac{3{,}100{,}000{,}000}{40{,}000{,}000} = 77{,}500 \text{ lbs. of dry steam daily.}$$

5 lbs. of water evaporated per lb. of coal.

$$\frac{77{,}500}{5} = 15{,}500 \text{ lbs. coal} = 7.75 \text{ tons per day @ } \$1.75.$$

775 x 365 x $1.75 = $4,950 annual coal charge.
808 Filtration estimated at $2.00 per M. G. for pumping.
" " 4.00 " " " filtering.
$6.00 " "

.87 x $6 x 365 = $1,970 annual cost of filtration.
$4,950 + $1,970 = $6,290 total annual cost of pumping and filtration—new plant at Bluestone River.

Cost of Pumping—Present Plant, Ada.

Assumed station duty = 40,000,000 ft. lbs. per 1,000 lbs. of dry steam.
Average daily pumpage 430,000 gallons.
Foot lbs. daily = 430,000 x 8.3 x 575 = 2,050,000,000.

$$1{,}000 \times \frac{2{,}050{,}000{,}000}{40{,}000{,}000} = 51{,}250 \text{ lbs. of dry steam daily.}$$

5 lbs. of water evaporated per lb. of coal.

$$\frac{51{,}250}{5} = 10{,}250 \text{ lbs. coal} = 5.125 \text{ tons per day @ } \$1.75.$$

5.125 x $1.75 x 365 = $3,280.00 total annual cost of coal at present plant at Ada.

The following comparison shows the cost of water per million gallons delivered at the twin tanks as between the Bluestone supply and the present source:

809 Bluestone Supply:

6% interest on investment cost of $244,140	$14,648
Annual depreciation	1,260
Pumping and filtration	6,920
Total annual cost	$22,825

$$\text{Cost per M. G.} \frac{\$22,828}{.87 \times 365} = \$71.75.$$

Present Supply:

6% on investment cost of $240,592	$14,435
Annual depreciation	1,170
Pumping	3,280
Total annual cost	$18,885

$$\text{Cost per M. G.} \frac{\$18,885}{.87 \times 365} = \$59.30.$$

We have now shown that the cost of water per million gallons delivered at the twin tanks is less expensive from the present source of supply than from the next cheapest available source, and, therefore, we must conclude that the springs owned and operated by the Bluefield Water Works and Improvement Company have some special value in excess of the value of the land and the cost of spring development.

810 What is the Amount of the Special Value and How is it to be Distributed Among the Various Groups of Springs.

Since water from the present source of supply costs $71.75—$59.30 = $12.45 per M. G. less than from the proposed Bluestone River supply, the annual saving resulting is equal to the annual pumpage multiplied by the saving per million gallons. Thus, .87 x 365 x $12.45 = $3,960 annual saving.

The total life of the springs has been somewhat conservatively estimated at 50 years; that is, it is thought that their useful life to this plant will extend approximately 40 years in the future. If we should assume that the springs will have no value at the end of 40 years, it is reasonable to suppose that the savings gained by their operation will diminish uniformly from $3,960 to 0 over the period, and in this case the total value of these springs at the present time is indicated by the present worth of their annual savings up to the time that they become an uneconomical source of supply in operation, or fail to deliver a sufficient quantity in dry weather to make them valuable.

The following table shows the determination of the present worth

of the annual saving throughout the life of the springs, the column showing savings diminishing uniformly throughout the 40 year period:

811

Years of operation.	Annual saving.	Present worth factor @ 5%.	Present worth.
1	$3,960	1.0	$3,960
2	3,861	.9524	3,680
3	3,762	.9070	3,410
4	3,663	.8638	3,170
5	3,564	.8227	2,940
6	3,465	.7835	2,720
7	3,366	.7462	2,510
8	3,267	.7107	2,340
9	3,168	.6768	2,140
10	3,069	.6446	1,980
11	2,970	.6139	1,820
12	2,871	.5847	1,680
13	2,775	.5568	1,540
14	2,673	.5303	1,420
15	2,574	.5051	1,300
16	2,475	.4810	1,190
17	2,376	.4581	1,088
18	2,277	.4363	995
19	2,178	.4155	910
20	2,079	.3957	828
21	1,980	.3769	748
22	1,881	.3589	677
23	1,782	.3418	610
24	1,683	.3256	550
25	1,584	.3101	482
26	1,485	.2953	440
27	1,386	.2812	390
28	1,287	.2678	345
29	1,188	.2551	304
30	1,089	.2429	255
31	990	.2314	229
32	891	.2204	196
33	792	.2099	166
34	693	.1999	139
35	596	.1904	113
36	495	.1813	90
37	396	.1727	68
38	297	.1644	49
39	198	.1566	33
40	99	.1491	15
Total savings			$47,520

812 In the above manner it is shown that the least value that lies in the water which flows from all the springs is, in round numbers, about $50,000.

Since the supply come from two groups of springs, one of which flows by gravity (the Gravity Group) into the tanks and the other (the Ada Group) requires pumping against a considerable head, it is obvious that the Gravity Group is the more valuable.

It is, therefore, next necessary to estimate the cost of water delivered at the tanks from each group of springs. This has been done in the following tables:

Investment cost.	Gravity group.	Ada group.
Real Estate and Easements	$5,485.	$13,175.
Spring development	14,645.	19,368.
Pipe lines	22,467.	58,660.
Pumping stations	.....	59,988.
Total	$42,597.	$151,191.
6% on investment	$2,556.	$9,071.
Annual depreciation	235.	937.
Cost of pumping	456.	3,280.
	$3,256.	$13,288.

$$\text{Cost per M. G.} = \frac{\$3,256}{.44 \times 365} = 20.30$$

$$\text{“ “ “} = \frac{\$13,288}{.43 \times 365} = \$84.70$$

813 We thus find that the Gravity group of springs is worth $\frac{84.70}{105.00}$ of the total value of $50,000 = $40,400, or in round numbers, $40,000, and the Ada group is worth about $10,000 each in excess of its land and development cost.

As a final step in this economic analysis, we should, if possible, distribute the value of all the springs in each group so as to find the value that should be given to each spring. Aside from the purity of the water, the value of any one spring must necessarily be dependent upon three important factors, namely, the amount of its flow, its distance from the tanks, and its elevation. A large yield and a high elevation tend to make a spring more valuable, while the greater its distance from the tanks the smaller necessarily must be its value, owing to the greater investment necessary to develop it for use.

The levels of all the springs have been given us from surveys made under the direction of Mr. McCarthy, the Superintendent, and

the flows of the springs at dry season of 1915 were carefully measured by Mr. A. T. Luce in his work of preparing the inventory for Alvord & Burdick. The general map gives opportunity for determining the distance development from the town tank. With this data, therefore, we can make a general apportionment which will be approximately correct for each spring.

The following table shows the manner in which the value per group of springs is apportioned between all the springs in each group, the value of each gravity spring being determined by the amount of its flow, its distance from the tanks, and its elevation, and the value of each Ada spring, and Beaver Pond spring by the amount of its flow and its distance from the tanks, the ques-
814 tion of elevation being neglected since all the Ada supply is pumped the same height.

Extra Value of Springs, Based on Elevation, Location, and Flow, Over and Above Land and Development Cost.

	Spring No.	Lift above 2,280'.	Est. min. flow, G. P. M.	Est. max. flow, G. P. M.	Av. flow, G. P. M.	1,000' pipe chargeable to spring.	Elev. x flow ÷ pipe chargeable.	% of total value.	Value per group.	Value per spring.
	1	486	19.4	54.8	42.6	.4	51.8	25.5	.....	$10,200
	2	530	12.5	35.4	27.5	.5	28.7	14.2	.....	5,680
	3	561	10.7	30.3	23.5	1.2	11.0	5.4	.....	2,160
	4*a*	524	6.8	19.2	15.0	.7	11.3	5.6	.....	2,240
	4*b*	524	12.5	35.4	27.5	.7	20.6	10.2	.....	4,080
	5	648	37.0	100.4	81.2	1.5	35.1	17.4	.....	6,960
Gravity	6*a*	534	34.8	98.0	76.5	1.1	37.2	18.4	.....	7,360
Group.	6*b*	534	3.6	10.2	7.9	1.1	3.8	1.9	$40,000	760
	7*a*	539	.2	.5	.4	.8	.3	.15	.....	60
	7*b*	539	.2	.6	.5	.8	.3	.15	.....	60
	7*c*	539	.2	.5	.4	.8	.3	.15	.....	60
	9	578	2.5	7.0	5.5	2.7	1.2	.6	.....	240
	10	563	.9	2.5	2.0	3.0	.4	.2	.....	80
	11	583	.7	2.0	1.5	3.2	.3	.15	.....	60
	12	...	3.6	...	2.6	1.27	2.1	.76	.....	76
	13	...	5.3	...	3.8	1.27	3.0	1.09	.....	109
	14	...	9.7	...	6.9	1.27	3.8	1.38	.....	138
	15	Flows into Ada Spring #21.								
	16	...	5.8	...	4.2	7.5	.6	.22	.....	22
	17	...	19.2	...	13.7	7.8	1.7	.62	.....	62
Ada	18*a*	...	.9	...	.7	5.7	.12	.04	$10,000	4
Group	18*b*	...	25.4	...	18.2	5.7	3.2	1.16	.....	116
	19	...	98.0	...	215.0	Undeveloped.				
	20	Abandoned.								
	21	...	350.0	...	250.0	1.27	197.0	71.56	.....	7,156
Beaver	22	0	.....	...	140.0	3.1	Polluted.			
Pond.	23	163	175.0	...	525.0	8.25	63.8	23.17	.....	2,317

815 As a result of this analysis of the conditions that influence the value of the water rights in the springs of the Bluefield Water Works & Improvement Company, I conclude that this value is conservatively placed at not less than $50,000, and that of this amount about $40,000 is the special value of the Gravity group of springs, and about $10,000 the special value of the Ada group of springs, including Beaver Pond spring.

Respectfully submitted,

JOHN W. ALVORD.

815a *Investigation and Report on the Past Cost of the Water Works Plant of the Bluefield Water Works and Improvement Company.*

January 1, 1916.

Compiled under the Direction of

John W. Alvord,

Hydraulic & Sanitary Engineer,

Chicago,

by

E. E. Smith,

Assistant Engineer.

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816 *Letter of Transmittal and Summary of Investigation.*

Mr. J. M. Wirgman, Pres.,
Bluefield Water Works & Improvement Co.,
Philadelphia, Pa.

DEAR SIR:

In accordance with your request we have made a detailed study of the past cost of the water works plant and property of the Bluefield Water Works & Improvement Company.

This work has necessitated a very careful and detailed study of the past financial history, and the records of the Company. It has been done under our general direction by Mr. E. E. Smith, an ex-

perienced and capable assistant of our office. A general description of the methods pursued, difficulties encountered and reasoning followed, will be found from place to place in the body of the report.

The basis of our work is an analysis of all items of receipt and expenditure, detailed and summarized year by year. Following this is given a copy, year by year, of the balance sheets of the Bluefield Water Works & Improvement Company, giving a summary of all business done by them, for purposes of comparison. As a result of this study, we find in summarizing the work, that:

817

1st. The amount of strictly cash outlay expended for the construction of the plant from its inception to January 1, 1916, is..... $415,704.00

2nd. The Past Cost of the plant and property with deficits computed by the Wisconsin Commission method (cost plus deficits), allowing 6% return and 1% depreciation is..... $471,494.00

3rd. The Past Cost and deficits computed by Wisconsin Commission method, allowing 7% return and 1% depreciation is..... $548,412.00

4th. The Past Cost and deficits computed by the Wisconsin method, allowing 7½% return and 1% depreciation is..... $592,416.00

5th. The Past Cost and deficits computed by Wisconsin method, allowing 8% return and 1% depreciation is..... $640,550.00

With these tables as a guide other tables at different rates of return can be computed as desired.

In pursuance with summation suggested for determining the cumulative investment cost as in the Richmond, Indiana case,

818 we find:

6th. The cumulative investment cost, adding all deficits year by year under a 6% return is..... $549,223.00

7th. The cumulative investment cost, adding all deficits year by year under a 7% return is..... $642,354.00

8th. The cumulative investment cost, adding all deficits year by year under a 7½% return is..... $695,735.00

9th. The cumulative investment cost, adding all deficits year by year under an 8% return is..... $754,345.00

Other tables can be computed at different rates of return as desired.

Our determination of the itemized year by year costs has not been accomplished without some difficulties which required engineering experience and construction knowledge to overcome. Our reasoning

in every case where the recorded evidence is not clear is set forth as plainly as possible herein.

We have endeavored to avoid any theories or personal conclusions in the main investigation of past records save those forced upon us by certain obscurities in the record, and the final summation of Past Cost plus deficits is made along lines heretofore suggested by
819 Utility Commissions. Not knowing the rate of fair return yet to be fixed by the Commission, we have necessarily computed the summation upon several different rates of return.

In Appendix "A" will be found a discussion by Mr. Alvord on the uses of Past Cost in arriving at Present Value, which is prepared with the more general interest in the principles involved in view, and may, it is hoped, prove helpful.

In concluding our work we wish to acknowledge our appreciation of the consideration and patience that has been shown us by the officers of your Company, to whom we are indebted for much information and assistance.

Respectfully submitted,

ALVORD & BURDICK.
JOHN W. ALVORD.

E. E. SMITH,
Asst. Engineer.

Chicago, Illinois,
November 21st, 1916.

819*a* THE REPORT.

819*b* *Report on Past Cost of Bluefield Water Works Properties.*

Theory of Investigation.

In the determination of the Past Cost of a property, two general sources may be examined. First, actual ascertainment of the expenditures found properly recorded, as obtained from the books and records of the Company, and second, an estimate of cost based upon a year by year inventory of the physical property, applying thereon unit prices such as prevailed at the time of installation. Where full and accurate records are available the first method is of course the one to be followed as the best evidence. Owing at times to the incompleteness of the records, it is sometimes necessary to accept for such gaps as may occur the latter method and sometimes necessary in places to employ a union of both methods. Unquestionably, the most accurate results are obtained from a summation of actual expenditures, and were the records fully complete and self-explanatory, the investigation would be simply accountants' work. Where, as is usually the case, gaps, omissions and incomplete description occur in the records the knowledge of the engineer is necessary to interpret what otherwise might be blind and misleading information.
820 Even where the information of the record is fairly complete the engineer familiar with the construction and operation of works of a similar character can verify and check the record

in many ways which would not occur to an accountant. In the case of Bluefield, the memoranda at hand for the purpose of making a complete list and proper assignment of all expenditures during the whole life of the Water Works plant is somewhat confused, owing to the fact that the Company originally was organized to do three lines of business at Bluefield, namely, Land, Houses, and Water Works. On January 1st, 1908, the Land and House accounts were separated from the Water Works account and for the year previous we have complete vouchers, therefore from January 1st, 1907 to the present time, it is not a difficult task to list expenditures that properly apply to the Water Works business. Fortunately the larger part of the expenditures (53%) for the Water Works property were made in this later period.

Actual Past Cost.

Those items which go to make up an actual Past Cost Record, consist of all expenditures made in good faith toward the building of the original plant or additions thereto and all expenditures
821 made in good faith to keep the plant in proper running order, so that the highest efficiency may be always had from it. Expenditures may either be in the form of cash, stock, or services rendered gratuitously by the owners. It is seen then that where all the actual expenditures are known, the burden of the investigation lies in correctly determining what expenditures are for building, as apart from those made in connection with the operation and maintenance of the property. The proper determination of such classification must result from such description as accompanies the record of the amount of money spent, supplemented at times by a working knowledge of what various supplies and materials would be for. Sometimes in the records the only description given is that a certain sum of money was paid a certain person, no further details of the transaction being given. It is necessary then to know the kind of business the payee is engaged in or what kind of work is usually performed for the company by this particular person or corporation to whom the money was paid. There is thus, the additional burden of proof to determine the nature of various transactions. After all the transactions and expenditures made are known, it is quite a simple conclusion to decide upon those expenditures made for construction, but it is more difficult to always determine with certainty between the upkeep cost or main-
822 tenance and the cost of pure operation. In the latter division in fact, it is impossible to draw a hard and fast rule to follow in each case, yet in order that our methods may be clearly understood for the classification of expenses, we will outline briefly certain rules which we have adopted to govern our distribution.

Any expenditure made after the installation of the structure or appurtenance is complete, made in an effort to keep the machine or pipe or structure in proper working order and yet not materially improving it above its original condition, may be said without doubt to be a mantenance expense and such it is easily understood to be. Just where the cost of operating ends and cost of maintenance be-

gins is ordinarily a rather indefinite division; for instance, in connection with the work on a pump, the expenses incurred by having a man watch it and keep it cleaned and oiled are evidently operation, while the cost of repairing the pump by reason of any break that may occur to its parts, is obviously maintenance, but there are a variety of charges between these more simply determined items such as the cost of packing and its installation, which are on the border line that divides the cost of maintenance from the cost of operation. There are also other short lived repairs to machinery and building such as painting, plastering, paperhanging, fire brick, gaskets,
823 test gages, etc., and there are expenditures for contingent depreciation, such as insurance, damage done because of small accidents and further there are costs such as those arising from the bringing of suits against people who have been committing nuisances and thereby endangering the water supply, which are in the general category of maintenance costs.

Generally speaking, operation costs have in this investigation been taken as those resulting from the purchase of supplies and labor to make the plant work properly and as well, of course, the cost of the collection of revenue, keeping of records, bookkeeping and financial matters. Maintenance costs have been confined to pure upkeep; small or large renewals, where distinctly indicated by the evidence as found.

Frequently the records which describe expenditures made are not full enough for intelligent classification and at times they are lacking altogether and it is necessary, in order to fill up approximately such gaps in the record, to learn the amount and character of the work that has been put in place during these intervals when the records of cost are missing and by studying similar work in the same vicinity, during the same period, apply unit cost of labor and materials to the obvious quantities found in the existing structure. Expenditures for maintenance and operation during such a period of no record
824 may be obtained fairly closely from a study of similar expenditures prior to and following the period of incomplete record.

The Bluefield Records.

Generally speaking, the records of the Bluefield Water Works and Improvement Company as a single enterprise are fairly complete. But in making a separate past cost analysis of only the water works property of the Company we have been confronted by the difficulty that no such separation had originally been thought necessary or desirable, and therefore, no division of the general expense, such as office expense, legal expense, taxes, sundry bills, etc., was made during the early years of the company's development.

The records available now in the company's possession are the bookkeeper's account books from the inception of the plant up to the present time, which, however, have to do entirely with the water works business since January 1st, 1908. From January 1st, 1907, up to the present time there are available vouchers showing records

of expenditures, separated as between plant and expense accounts, and in the minute books of the Company from its beginning are shown annual balance sheets for the entire life of the plant. These balance sheets have been very helpful in arriving at the amount of stock, bonds, interest, dividends, etc., which are believed to be applicable to the water works part of the business for any particular year.

825 Deficits in Return.

Whenever there are deficits in the fair return in the early years or throughout the life of the property it is usual to assume in determining the past cost of a property that these deficits are a part of the cost.

The determination of deficits may be estimated in two ways, first, as suggested by the Wisconsin Commission, in which the deficits below the assumed fair rate of return for each year are added into the capital account at the end of that year and carried forward to the next year, as a part of the cost of the property, and, second, on an investment basis as suggested by Judge Duncan on the hearing of the Richmond case by the Indiana Utility Commission. This latter way of considering them consists of summing up the amounts of money that have been put into the business by the owner and the amounts that have been drawn out by him in the shape of interest or dividends year by year, assuming for each year a fair return rate, and considering the return rate as a part of the money that was put back into the business. This method makes the cost of the property cumulative.

826 Before computations can be made upon either of the above methods, it is necessary to determine as accurately as possible those factors that enter into the computations. These are shown in the following table in connection with which it is to be noted that the general expense, dividends, bond interest and interest on loans and stock are, for the earlier years of the plant history, necessarily pro rated. That is to say, for instance, the amount of bonds taken as applicable to the water works property, are taken in the proportion of the capital invested in water works property to the total capital invested, which is indicated by annual balance sheets shown in the minute book of the Company. After 1907, when the land and house business was separated from the water business it was unnecessary to make any such assumptions on a pro rata basis, for since that time the records are conclusive evidence of the bonds and other amounts that have gone into the business, and of the amounts that have been withdrawn.

While it cannot be claimed that the above pro rata basis is strictly accurate, under the circumstances it is the best solution that can be suggested and it is believed that the capital invested in the various kinds of business, as shown by the balance sheets in the minute book, is a rational basis for making the division of stocks, bonds, etc., that apply to those branches of the business or solely to the water

works business. It is felt, therefore, that the results shown in
827 the following table are approximately correct and reasonable.

The interpretation of the accounts and records of the Bluefield Water Works and Improvement Company, for the period prior to January 1st, 1908, was not accomplished without some difficulties, which required engineering experience as well as a knowledge of construction, in order to classify expenditures. We have endeavored to set out clearly all these expenditures, as well as the division of income, in the yearly details that form a part of this report.

Each yearly statement includes a brief history as to the more important developments throughout the year, and also gives in as much detail as is possible the expenditures for the year, separated as between plant account, income and operation, and also a resumé of the interest and dividends for the year.

The actual plant expenditures are quite clearly defined by the recorded accounts and vouchers extending throughout the life of the plant.

Up to and including 1901 the water works plant expenditures are shown by the cash book and ledger accounts in a manner that leaves no doubt as to their being properly recorded. From 1902 to
828 1906 inclusive owing to the transfer of the books to the Philadelphia office and a change in the method of bookkeeping, the plant expenditures are not so clearly defined. Very few of the plant costs show in detail in the cash book, but are condensed or summarized and carried in the ledger account, from which the data for this report was taken, practically as it stands. In the years following 1906 the Company has complete vouchers for all expenditures at Bluefield, and these were used as the basis for data inasmuch as a study of them discloses details that could not be obtained from the books. During this period, however, the books were used to such a degree as was necessary in establishing a general check on the vouchers. In but few instances have expenditures shown as an operating expense on the Company's record been considered as a plant charge.

In general, the total plant cost of $415,704 on January 1, 1916, check quite closely with the book value of that date (which is approximately $320,000), when it is considered that approximately $80,000 has been charged off for depreciation, and that all such items of cost, such as tools, materials, supplies, utility equipment, and office furniture and fixtures have not been considered by the Company as a part of the plant, but have been carried in separate accounts.

829 The income for each year up until 1908 has been taken from the Revenue and Expense account on the books of the Company practically as it shows in the following annual statements, except where an item of income has been offset by an item of expense relating to the same transaction.

Perhaps more difficulty was experienced in the separation of the water works expense accounts between the upkeep cost or maintenance and the cost of pure operation. Up until 1902, as heretofore stated in connection with the discussion on plant account, the

Year.	Plant account. For year.	Plant account. Total.	Income.	Operation.	Pro rata general expense.	Total cost of operation.	Maintenance.	Total outlay for operation & maintenance.	Net return applicable to depr., bond int., & dividends.	Pro rata bond interest & interest on loans.	Pro rata dividends.	Total withdrawn for bond interest & dividends.	Pro rata stock applicable to water works.
1890	$27,815	$27,815	$3,331	$152	$470	$622	$29	$651	$2,680	$0	$855	$855	$35,000
1891	11,161	38,976	7,684	213	515	728	0	728	6,956	0	3,690	3,690	1,700
1892	26,486	65,462	9,818	701	1,070	1,771	74	1,845	7,973	755	3,360	4,115	19,800
1893	2,141	67,603	11,124	2,222	975	3,197	296	3,493	7,631	1,120	525	1,645	—4,000
1894	922	68,525	8,619	2,166	975	3,141	104	3,245	5,374	1,310	525	1,835	0
1895	4,361	72,886	7,169	3,498	1,355	4,853	101	4,954	2,215	1,195	0	1,195	1,700
1896	187	73,073	9,866	4,383	1,200	5,583	106	5,689	4,177	1,210	0	1,210	1,000
1897	1,326	74,399	9,375	3,105	1,460	4,565	47	4,612	4,763	1,625	0	1,625	800
1898	1,593	75,992	10,627	3,123	1,185	4,308	156	4,464	6,163	1,630	0	1,630	1,000
1899	3,415	79,407	10,504	3,617	945	4,562	225	4,787	5,717	1,670	0	1,670	1,000
1900	17,910	97,317	10,340	3,695	1,770	5,465	216	5,681	4,659	1,935	0	1,935	10,000
1901	28,049	125,366	13,787	5,104	2,520	7,624	311	7,935	5,852	2,693	0	2,693	18,500
1902	3,988	129,354	15,644	6,372	1,810	8,182	123	8,305	7,339	2,812	0	2,812	2,500
1903	8,100	137,454	20,048	11,999	1,880	13,879	666	14,545	5,503	2,480	0	2,480	4,000
1904	11,764	149,218	19,183	12,019	1,945	13,964	0	13,964	5,219	2,200	0	2,200	—1,500
1905	5,803	155,021	19,105	8,619	735	9,354	2,225	11,579	7,526	2,180	0	2,180	17,000
1906	39,194	194,215	23,307	7,722	1,075	8,797	4,030	12,827	10,480	1,185	0	1,185	50,500
1907	76,499	270,714	30,936	11,221	1,200	12,421	4,962	17,383	13,553	760	0	760	19,000
1908	29,015	299,729	25,839	10,529	1,333	11,862	1,952	13,814	12,025	135	10,080	10,215	74,000
1909	11,576	311,305	25,362	11,096	1,333	12,429	2,084	14,513	10,849	1,125	0	1,125	0
1910	8,272	319,577	31,528	12,034	1,500	13,534	5,258	18,792	12,736	1,215	7,560	8,775	0
1911	11,193	330,770	35,778	14,325	1,500	15,825	2,675	18,500	17,278	1,280	10,080	11,360	0
1912	37,040	367,810	33,822	11,418	1,500	12,918	3,312	16,230	17,592	1,215	5,040	6,255	0
1913	16,796	384,606	36,092	12,320	3,596	15,916	3,411	19,327	16,765	3,050	0	3,050	60,000
1914	14,831	399,437	39,857	15,590	5,200	20,790	5,380	26,170	13,687	0	0	0	0
1915	16,267	415,704	42,895	17,792	5,200	22,992	4,700	27,692	15,203	0	0	0	0

expenditures are set forth in the cash book and ledger in sufficient detail so that with some little study the separation could be made without material inaccuracies. While the expense accounts for the years from 1902 to 1906 inclusive are not shown in as great detail as in the previous years, it is believed that there can be no serious error in the separation as shown in the annual statements for these years.

In connection with the voucher record of expenditures from 1906 to the present time, all expenditures aside from plant costs are listed as M. & R. (maintenance and repair) charges, and include all materials and supplies that go into operating costs. However, each M. & R. item is explained as to its application, such as

830 M. & R. (Mains).
M. & R. (Springs).
M. & R. (Pumping).
M. & R. (Coal).

etc., so that the separation is not a difficult matter. The payroll vouchers show the distribution of labor in such a manner that but little study is necessary to determine whether it belongs to operation or maintenance.

As heretofore stated the business of the Company, as far as the general overhead costs, bonds, interest, dividends and stock are concerned, is carried upon the books as a single enterprise. Inasmuch as each of the above have had to do, and are therefore, applicable in some degree to the three kinds of business in which the Company has been engaged, namely, land, houses, and water works, it is necessary to decide as to the best method of arriving at the proportion that should be applied to the water works division of the business.

The minute book of the Company contains for each year a balance sheet, copies of which are included herein, and which have been used in determining the method of separating the general overhead expense and financial transactions, as between the various lines of business, thus arriving at the amounts to be applied to the water works only.

831 The balance sheets show the capital invested in land, houses, and water works at the end of each year, and the items of general overhead expense and financial transaction applicable to water works have been pro rated as previously explained. As heretofore stated it is believed that the results obtained by such a pro rata basis are approximately correct and reasonable.

(Here follows table marked page 832.)

833 Wisconsin Method.

The past cost of the plant and business of the water works property of the Bluefield Water Works & Improvement Company has been computed by the Wisconsin Commission Method, as shown in the four tables immediately following. It has been found that, computed in this way, the present cost of the property is:

1st.	Allowing 6% return and 1% for depreciation.....	$471,494
2nd.	Allowing 7% return and 1% for depreciation.....	548,412
3rd.	Allowing 7½% return and 1% for depreciation....	592,416
4th.	Allowing 8% return and 1% for depreciation.....	640,550

Based on 6% Return + 1% Depreciation.

1. Year.	2. Earning value.	3. Additions during year.	4 Depreciation @ 1%.	5 Interest at 6%.	6 Total col. 4 + col. 5.	7 Net earnings from operation.	8 Deficits col. 6 — col. 7.	9 Value at end of year, col. 2 + col. 3 + col. 8.
*1890	$17,882	$9,933	$120	$715	$835	$2,680	—$1,845	$25,970
1891	25,970	11,161	200	1,558	1,818	6,956	—5,138	31,993
1892	31,993	26,486	320	1,920	2,240	7,973	—5,733	52,746
1893	52,746	2,141	527	3,165	3,692	7,631	—3,939	50,948
1894	50,948	922	509	3,057	3,566	5,374	—1,808	50,062
1895	50,062	4,361	501	3,004	3,505	2,215	+1,290	55,713
1896	55,713	187	557	3,343	3,900	4,177	—277	55,623
1897	55,623	1,326	556	3,337	3,893	4,763	—870	56,079
1898	56,079	1,593	561	3,365	3,926	6,163	—2,237	55,435
1899	55,435	3,415	554	3,326	3,880	5,717	—1,837	57,013
1900	57,013	17,910	570	3,421	3,991	4,659	—668	74,255
1901	74,255	28,049	743	4,455	5,198	5,852	—654	101,650
1902	101,650	3,988	1,017	6,099	7,116	7,339	—223	105,415
1903	105,415	8,100	1,054	6,325	7,379	5,503	+1,876	115,391
1904	115,391	11,764	1,154	6,923	8,077	5,219	+2,858	130,013
1905	130,013	5,806	1,300	7,801	9,101	7,526	+1,575	137,391
1906	137,391	39,194	1,374	8,243	9,617	10,480	—863	175,722
1907	175,722	76,499	1,757	10,543	12,300	13,553	—1,253	250,968
1908	250,968	29,015	2,510	15,058	17,568	12,025	+5,543	285,526
1909	285,526	11,576	2,855	17,132	19,987	10,849	+9,138	306,240
1910	306,240	8,272	3,062	18,374	21,436	12,736	+8,700	323,212
1911	323,212	11,193	3,232	19,393	22,625	17,278	+5,347	339,752
1912	339,752	37,040	3,398	20,385	23,783	17,592	+6,191	382,983
1913	382,983	16,796	3,830	22,979	26,809	16,765	+10,044	409,823
1914	409,823	14,831	4,098	24,589	28,687	13,687	+15,000	439,654
1915	439,654	16,267	4,397	26,379	30,776	15,203	+15,573	471,494

*Taken on ⅔ of year.

835 *Analysis of Past Cost and Earnings of the Water Works Properties of the Bluefield Water Works & Improvement Company.*

Based on 7% Return + 1% Depreciation.

1. Year.	2. Earning value.	3. Additions during year.	4 Depreciation @ 1%.	5 Interest at 7%.	6 Total col. 4 + col. 5.	7 Net earnings from operation.	8 Deficits col. 6 — col. 7.	9 Value at end of year, col. 2 + col. 3 + col. 8.
*1890	$17,882	$9,933	$120	$834	$954	$2,680	—$1,726	$26,089
1891	26,089	11,161	261	1,826	2,087	6,956	—4,869	32,381
1892	32,381	26,486	324	2,267	2,591	7,973	—5,382	53,485
1893	53,485	2,141	535	3,744	4,279	7,631	—3,352	52,274
1894	52,274	922	523	3,659	4,182	5,374	—1,192	52,004
1895	52,004	4,361	520	3,640	4,160	2,215	+1,945	58,310
1896	58,310	187	583	4,082	4,665	4,177	+488	58,985
1897	58,985	1,326	590	4,129	4,719	4,763	—44	60,267
1898	60,267	1,593	603	4,219	4,822	6,163	—1,341	60,519
1899	60,519	3,415	605	4,236	4,841	5,717	—876	63,058
1900	63,058	17,910	631	4,414	5,045	4,659	+386	81,354
1901	81,354	28,049	814	5,695	6,509	5,852	+657	110,060
1902	110,060	3,988	1,101	7,704	8,805	7,339	+1,466	115,514
1903	115,514	8,100	1,155	8,086	9,241	5,503	+3,738	127,352
1904	127,352	11,764	1,274	8,915	10,189	5,219	+4,970	144,086
1905	144,086	5,803	1,441	10,086	11,527	7,526	+4,001	153,890
1906	153,890	39,194	1,539	10,772	12,311	10,480	+1,831	194,915
1907	194,915	76,499	1,949	13,644	15,593	13,553	+2,040	273,454
1908	273,454	29,015	2,735	19,142	21,877	12,025	9,852	312,321
1909	312,321	11,576	3,123	21,862	24,985	10,849	14,136	338,033
1910	338,033	8,272	3,380	23,662	27,042	12,736	14,306	360,611
1911	360,611	11,193	3,606	25,243	28,849	17,278	11,571	383,375
1912	383,375	37,040	3,834	26,836	30,670	17,592	13,078	433,493
1913	433,493	16,796	4,335	30,345	34,680	16,765	17,915	468,204
1914	468,204	14,831	4,682	32,774	37,456	13,687	23,769	506,804
1915	506,804	16,267	5,068	35,476	40,544	15,203	25,341	548,412

*Taken on ⅔ of year.

836 *Analysis of Past Cost and Earnings of the Water Works Properties of the Bluefield Water Works & Improvement Company.*

Based on 7½% Return + 1% Depreciation.

836 *Analysis of Past Cost and Earnings of the Water Works*

Based on 7½% Return + 1% Depreciation.

1. Year.	2. Earning value.	3. Additions during year.	4 Depreciation @ 1%.	5 Interest @ 7½%.	6 Total col. 4 + col. 5.	7 Net earnings from operation.	8 Deficits col. 6 — col. 7.	9 Value at end of year, col. 2 + col. 3 + col. 8.
*1890	$17,882	$9,933	$120	$893	$1,013	$2,680	—$1,667	$26,148
1891	26,148	11,161	261	1,961	2,222	6,956	—4,734	32,575
1892	32,575	26,486	326	2,443	2,769	7,973	—5,204	53,857
1893	53,857	2,141	539	4,039	4,578	7,631	—3,053	52,945
1894	52,945	922	529	3,971	4,500	5,374	—874	52,993
1895	52,945	4,361	530	3,974	4,504	2,215	+2,289	59,643
1896	59,643	187	596	4,473	5,069	4,177	+892	60,722
1897	60,722	1,326	607	4,554	5,161	4,763	+398	62,446
1898	62,446	1,593	624	4,683	5,307	6,163	—856	63,183
1899	63,183	3,415	632	4,739	5,371	5,717	—346	66,252
1900	66,252	17,910	663	4,969	5,632	4,659	+973	85,135
1901	85,135	28,049	851	6,385	7,236	5,852	+1,384	114,568
1902	114,568	3,988	1,146	8,593	9,739	7,339	+2,400	120,956
1903	120,956	8,100	1,210	9,072	10,282	5,503	+4,779	133,835
1904	133,835	11,764	1,338	10,038	11,376	5,219	+6,157	151,756
1905	151,756	5,803	1,518	11,382	12,900	7,526	+5,374	162,933
1906	162,933	39,194	1,629	12,220	13,849	10,480	+3,369	205,496
1907	205,496	76,499	2,055	15,412	17,467	13,553	+3,914	285,909
1908	285,909	29,015	2,859	21,443	24,302	12,025	+12,277	327,201
1909	327,201	11,576	3,272	24,540	27,812	10,849	16,963	355,740
1910	355,740	8,272	3,557	26,681	30,238	12,736	17,502	381,514
1911	381,514	11,193	3,815	28,614	32,429	17,278	15,151	407,858
1912	407,858	37,040	4,079	30,589	34,668	17,592	17,076	461,974
1913	461,974	16,796	4,620	34,648	39,268	16,765	22,503	501,273
1914	501,273	14,831	5,013	37,595	42,608	13,687	28,921	545,025
1915	545,025	16,267	5,450	40,877	46,327	15,203	31,124	592,416

*Taken for ⅔ of year.

Based on 8% Return + 1% Depreciation.

1. Year.	2. Earning value.	3. Additions during year.	4 Depreciation @ 1%.	5 Interest @ 8%.	6 Total col. 4 + col. 5.	7 Net earnings from operation.	8 Deficits col. 6 — col. 7.	9 Value at end of year, col. 2 + col. 3 + col. 8.
*1890	$17,882	$9,993	$120	$953	$1,073	$2,680	—$1,607	$26,208
1891	26,208	11,161	262	2,097	2,359	6,956	—4,597	32,772
1892	32,772	26,486	328	2,622	2,950	7,973	—5,023	54,235
1893	54,235	2,141	542	4,339	4,861	7,631	—2,770	53,606
1894	53,606	922	536	4,288	4,824	5,374	— 550	53,978
1895	53,978	4,361	540	4,318	4,858	2,215	+2,643	60,982
1896	60,982	187	610	4,879	5,489	4,177	+1,312	62,481
1897	62,481	1,326	625	4,998	5,623	4,763	+860	64,667
1898	64,667	1,593	647	5,173	5,820	6,163	—343	65,917
1899	65,917	3,415	659	5,273	5,932	5,717	+215	69,547
1900	69,547	17,910	695	5,564	6,259	4,659	+1,600	89,057
1901	89,057	28,049	891	7,125	8,016	5,852	+2,164	119,270
1902	119,270	3,988	1,193	9,542	10,735	7,339	+3,396	126,654
1903	126,654	8,100	1,267	10,132	11,399	5,503	+5,896	140,650
1904	140,650	11,764	1,406	11,252	12,658	5,219	+7,439	159,853
1905	159,853	5,803	1,599	12,788	14,387	7,526	+6,861	172,517
1906	172,517	39,194	1,725	13,801	15,526	10,480	+5,046	216,757
1907	216,757	76,490	2,168	17,341	19,509	13,553	+5,956	299,212
1908	299,212	29,015	2,992	23,937	26,929	12,025	14,904	343,131
1909	343,131	11,576	3,431	27,450	30,881	10,845	20,032	374,739
1910	374,739	8,272	3,747	29,979	33,726	12,736	20,990	404,001
1911	404,001	11,193	4,040	32,320	36,360	17,278	19,082	434,276
1912	434,276	37,040	4,343	34,742	39,085	17,592	21,493	492,809
1913	492,809	16,796	4,928	39,425	44,353	16,765	27,588	537,193
1914	537,193	14,831	5,372	42,975	48,347	13,687	34,660	586,684
1915	586,684	16,267	5,867	46,935	52,802	15,203	37,599	640,550

*Taken for ⅔ of year.

838 The past cost of the Water Works Properties of the Bluefield Water Works & Improvement Company may also be taken on a cumulative investment basis, that is to say, from the point of view of what the investor actually puts in and what he has actually taken out in view of some fixed rate of return. This involves only a study as to the amounts that have been put into the business, and as to the amounts that have been withdrawn, assuming that the property in use was entitled to some specified fair rate of return on the investment. This return was either paid out as dividends or interest on funded debt, and the remainder, if any, reinvested in the property. The only additional investment in the property would be made by cash raised from bond issues or capital stock issues. Four computations of the cumulative investment cost of the Water Works Properties of the Bluefield Water Works & Improvement Company, the returns being taken at 6%, 7%, 7½% and 8% respectively have been made. Under this method no depreciation is allowed as it has been up to date largely met from within the property itself. The following tabulations illustrate the method and show the results. On the basis of a 6% return the present cumulative cost is $549,320,

On 7% basis it is $637,873
On 7½% " " " 695,731
On 8% " " " 754,345.

839 *Table Showing Investment Result in the Water Works Properties of the Bluefield Water Works and Improvement Company at 6%.*

Year.	Interest @ 6%.	Amounts withdrawn. Dividends.	Bond interest.	Interest on loans.	Total.	Left in.	Debt. Bonds sold.	Loans from stockholders.	Stock.	Capital account Dec. 31st.
*1890	$1,400	$855	0	0	$855	$545	0	0	$35,000	$35,545
1891	2,133	3,690	0	0	3,690	—1,557	0	0	1,700	35,688
1892	2,141	3,360	$755	0	4,115	—1,974	$10,790	0	19,800	64,304
1893	3,858	525	1,120	0	1,645	2,213	5,210	0	—4,000	67,727
1894	4,064	525	1,310	0	1,835	2,229	2,715	0	0	72,671
1895	4,360	0	1,195	0	1,195	3,165	—1,650	0	1,700	75,886
1896	4,553	0	1,210	0	1,210	3,343	215	0	1,000	80,444
1897	4,827	0	1,625	0	1,625	3,202	5,925	0	800	90,371
1898	5,422	0	1,630	0	1,630	3,792	70	0	1,000	95,233
1899	5,714	0	1,670	0	1,670	4,044	575	0	1,000	100,852
1900	6,051	0	1,935	0	1,935	4,116	3,780	0	10,000	118,748
1901	7,125	0	2,515	$178	2,693	4,432	8,280	$5,400	18,500	155,360
1902	9,322	0	2,550	262	2,812	6,510	580	1,400	2,500	166,350
1903	9,981	0	1,380	1,100	2,480	7,501	—36,400	13,970	4,000	155,331
1904	9,320	0	0	2,200	2,200	7,120	0	18,335	—1,500	179,286
1905	10,757	0	0	2,180	2,180	8,577	0	—335	17,000	204,528
1906	12,272	0	0	1,185	1,185	11,087	0	—16,500	50,500	249,525
1907	14,971	0	0	760	760	14,211	0	—22,180	19,000	260,556
1908	15,633	10,080	0	135	10,215	5,418	0	19,110	74,000	359,084
1909	21,545	0	0	1,125	1,125	20,420	0	—1,800	0	377,704
1910	22,662	7,560	0	1,215	8,775	13,887	0	—3,220	0	388,371
1911	23,302	10,080	0	1,280	11,360	11,942	0	+11,800	0	412,113
1912	24,727	5,040	0	1,215	6,255	18,472	0	+22,120	0	452,705
1913	27,162	0	0	3,050	3,050	24,112	0	+9,870	60,000	488,807
						.....	.....	—57,880	.....	.....
1914	29,328	0	0	0	0	29,328	0	0	0	518,135
1915	31,088	0	0	0	0	31,088	0	0	0	549,223

*Taken on ⅔ of Year.

840 *Table Showing Investment Result in the Water Works Properties of the Bluefield Water Works and Improvement Company at 7%.*

Year.	Interest @ 7%.	Amounts withdrawn.				Left in.	Debt.		Stock.	Capital account Dec. 31st.
		Dividends.	Bond interest.	Interest on loans.	Total.		Bonds sold.	Loans from stockholders.		
1890	$1,632	$855	0	0	$855	$777	0	0	$35,000	$35,777
1891	2,504	3,690	0	0	3,690	—1,186	0	0	1,700	36,291
1892	2,540	3,360	$755	0	4,115	—1,575	$10,790	0	19,800	65,306
1893	4,571	525	1,120	0	1,645	2,926	5,210	0	—4,000	69,442
1894	4,861	525	1,310	0	1,835	3,026	2,715	0	0	75,183
1895	5,263	0	1,195	0	1,195	4,068	—1,650	0	1,700	79,301
1896	5,551	0	1,210	0	1,210	4,341	215	0	1,000	84,857
1897	5,940	0	1,625	0	1,625	4,315	5,925	0	800	95,897
1898	6,713	0	1,630	0	1,630	5,083	70	0	1,000	102,050
1899	7,144	0	1,670	0	1,670	5,474	575	0	1,000	109,099
1900	7,637	0	1,935	0	1,935	5,702	3,780	0	10,000	128,581
1901	9,001	0	2,515	$178	2,693	6,308	8,280	$5,400	18,500	167,069
1902	11,695	0	2,550	262	2,812	8,883	580	1,400	2,500	180,432
1903	12,630	0	1,380	1,100	2,480	10,150	—36,490	13,970	4,000	172,062
1904	12,044	0	0	2,200	2,200	9,844	0	18,335	—1,500	198,741
1905	13,912	0	0	2,180	2,180	11,732	0	—335	17,000	227,138
1906	15,900	0	0	1,185	1,185	14,715	0	—16,590	50,500	275,763
1907	19,303	0	0	760	760	18,543	0	—22,180	19,000	291,126
1908	20,379	10,080	0	135	10,215	10,164	0	19,110	74,000	394,400
1909	27,608	0	0	1,125	1,125	26,483	0	—1,800	0	419,083
1910	29,336	7,560	0	1,215	8,775	20,561	0	—3,220	0	436,424
1911	30,550	10,080	0	1,280	11,360	19,190	0	+11,800	0	467,414
1912	32,718	5,040	0	1,215	6,255	26,463	0	+22,120	0	515,997
1913	36,120	0	0	3,050	3,050	33,070	0	+9,870	60,000	561,057
						.....	.....	—57,880	.....	.....
1914	39,274	0	0	0	0	39,274	0	0	0	600,331
1915	42,023	0	0	0	0	42,023	0	0	0	642,354

841 *Table Showing Investment Result in the Water Works Properties of the Bluefield Water Works and Improvement Company at 7½%.*

Year.	Interest @ 7½%.	Amounts withdrawn.				Left in.	Debt.		Stock.	Capital account Dec. 31st.
		Dividends.	Bond interest.	Interest on loans.	Total.		Bonds sold.	Loans from stockholders.		
1890	$1,748	$855	0	0	$855	$893	0	0	$35,000	$35,893
1891	2,692	3,690	0	0	3,690	—998	0	0	1,700	36,595
1892	2,744	3,360	$755	0	4,115	1,371	$10,790	0	19,800	65,814
1893	4,936	525	1,120	0	1,645	3,291	5,210	0	—4,000	70,315
1894	5,273	525	1,310	0	1,835	3,438	2,715	0	0	76,468
1895	5,735	0	1,195	0	1,195	4,540	—1,650	0	1,700	81,058
1896	6,079	0	1,210	0	1,210	4,869	215	0	1,000	87,142
1897	6,535	0	1,625	0	1,625	4,910	5,925	0	800	98,777
1898	7,408	0	1,630	0	1,630	5,778	70	0	1,000	105,625
1899	7,922	0	1,670	0	1,670	6,252	575	0	1,000	113,452
1900	8,509	0	1,935	0	1,935	6,574	3,780	0	10,000	133,806
1901	10,035	0	2,515	178	2,693	7,342	8,280	$5,400	18,500	173,328
1902	12,999	0	2,550	262	2,812	10,187	580	1,400	2,500	187,995
1903	14,099	0	1,380	1,100	2,480	11,619	—36,490	13,970	4,000	181,094
1904	13,582	0	0	2,200	2,200	11,382	0	18,335	—1,500	209,311
1905	15,698	0	0	2,180	2,180	13,518	0	—335	17,000	239,494
1906	17,902	0	0	1,185	1,185	16,777	0	—16,590	50,500	290,181
1907	21,763	0	0	760	760	21,002	0	—22,180	19,000	308,004
1908	23,100	10,080	0	135	10,215	12,885	0	19,110	74,000	413,999
1909	31,050	0	0	1,125	1,125	29,925	0	—1,800	0	442,124
1910	33,159	7,560	0	1,215	8,775	24,384	0	—3,220	0	463,288
1911	34,746	10,080	0	1,280	11,360	23,386	0	+11,800	0	498,474
1912	37,385	5,040	0	1,215	6,255	31,130	0	+22,120	0	551,724
1913	41,379	0	0	3,050	3,050	38,329	0	+9,870	60,000	602,043
						.....	.....	—57,880	.....	.....
1914	45,153	0	0	0	0	45,153	0	0	0	647,196
1915	48,539	0	0	0	0	48,539	0	0	0	695,735

Year.	Interest @ 8%.	Amounts withdrawn.				Left in.	Debt.		Stock.	Capital account Dec. 31st.
		Dividends.	Bond interest.	Interest on loans.	Total.		Bonds sold.	Loans from stockholders.		
1890	$1,865	$855	0	0	$855	$1,010	0	0	$35,000	$36,010
1891	2,881	3,690	0	0	3,690	—809	0	0	1,700	36,901
1892	2,952	3,360	$755	0	4,115	—1,163	$10,799	0	19,800	66,328
1893	5,306	525	1,120	0	1,645	3,661	5,210	0	—4,000	71,199
1894	5,696	525	1,310	0	1,835	3,861	2,715	0	0	77,775
1895	6,222	0	1,195	0	1,195	5,027	—1,650	0	1,700	82,852
1896	6,628	0	1,210	0	1,210	5,418	215	0	1,000	89,485
1897	7,159	0	1,625	0	1,625	5,534	5,925	0	800	101,744
1898	8,140	0	1,630	0	1,630	6,510	70	0	1,000	109,324
1899	8,746	0	1,670	0	1,670	7,076	575	0	1,000	117,975
1900	9,438	0	1,935	0	1,935	7,503	3,780	0	10,000	139,258
1901	11,141	0	2,515	$178	2,693	8,448	8,280	$5,400	18,500	179,886
1902	14,391	0	2,550	262	2,812	11,579	580	1,400	2,500	195,945
1903	15,675	0	1,380	1,100	2,480	13,195	—36,490	13,970	4,000	190,620
1904	15,250	0	0	2,200	2,200	13,050	0	18,335	—1,500	220,505
1905	17,640	0	0	2,180	2,180	15,460	0	—335	17,000	252,630
1906	20,210	0	0	1,185	1,185	19,025	0	—16,590	50,500	305,565
1907	24,445	0	0	760	760	23,685	0	—22,180	19,000	326,070
1908	26,086	10,080	0	135	10,215	15,871	0	19,110	74,000	435,051
1909	34,804	0	0	1,125	1,125	33,679	0	—1,800	0	466,930
1910	37,354	7,560	0	1,215	8,775	28,579	0	—3,220	0	492,289
1911	39,383	10,080	0	1,280	11,360	28,023	0	+11,800	0	532,112
1912	42,569	5,040	0	1,215	6,255	36,314	0	+22,120	0	590,546
1913	47,244	0	0	3,050	3,050	44,194	0	+9,870	60,000	646,730
						.....	.....	—57,880	.....	.....
1914	51,738	0	0	0	0	51,738	0	0	0	698,468
1915	55,877	0	0	0	0	55,877	0	0	0	754,345

Vol. II

TRANSCRIPT OF RECORD.

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, [redacted] 1922

No. [redacted] 256

BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY, PLAINTIFF IN ERROR,

vs.

PUBLIC SERVICE COMMISSION OF THE STATE OF WEST VIRGINIA ET AL.

IN ERROR TO THE SUPREME COURT OF APPEALS OF THE STATE OF WEST VIRGINIA.

FILED JANUARY 20, 1922.

(28,665)

(28,665)

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1921.

No. 710.

BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY, PLAINTIFF IN ERROR,

vs.

PUBLIC SERVICE COMMISSION OF THE STATE OF WEST VIRGINIA ET AL.

IN ERROR TO THE SUPREME COURT OF APPEALS OF THE STATE OF WEST VIRGINIA.

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BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY, Petitioner,

vs.

PUBLIC SERVICE COMMISSION, Respondent.

VOLUME II.

842a *Details of Investigation—Year by Year.*

842b Details of Investigation.

Year by Year Analysis of Detailed Expenditures and Receipts.

843 Year by Year Analysis.

The following pages give details of the study of the Company's records showing for each year a detailed statement of Plant Account, Income, Operation and Maintenance, with a Summary of the Plant Account, Income and Operation, and a Résumé of the Interest and Dividends. The letters used in connection with the itemized list of expenditures under Plant Account serve as a key in identifying the expenditure with the particular part of the plant. On items where there has been doubt as to just what the expenditure was made for no key letter has been used. The explanation of the letters is as follows:

E—Engineering.
L—Legal Expense.
R—Real Estate and Rights-of-Way.
W—Water Supply.
T—Tanks.
B—Buildings.
M—Machinery.
P—Pipe Lines.
S—Services and Meters.
F—Furniture and Fixtures.

844 1890.

The Bluefield Water Works and Improvement Company was organized on September 20th. Stock was subscribed to the amount of $252,000, and was paid for in cash on December 31st. The water works plant had been owned by the N. & W. Ry., and after having been purchased by the Virginia Land Company, was turned

in as a part of the cash payment on that company's stock subscription.

In view of all arrangements having been made for the above transaction to take place on December 31, the work on the development of the water plant was begun in May. At this time the plant consisted of a wooden tank on the site of the present Bland St. tank, Springs Nos. 1 and 2, and a pipe line leading to the tank. From record of expenditures as shown in the cash book, it is found that the tank was improved with a roof addition, and Springs Nos. 1 to 4 were connected with 4" pipe lines. Some work was done in the laying of mains for a more complete distribution system. A 4" meter was installed in the yard of the N. & W. R. R., who took water through it, under special contract, for supplying their engines.

The records of the Company do not show that the cost of the present office building lot and Bland St. tank lot was ever charged to the water works end of the business, and they have, there-
845 fore, been included as a part of the plant, at the original cost of land purchased by the Virginia Land Co., (and turned in as stock) namely $300.00 per acre. The salary of the foreman is charged to the plant account in view of the fact that during the early years of the water works development, practically all of his time must have been spent in superintending construction, rather than in operating the plant.

The bulk of the revenue was derived from the N. & W. R. R. The domestic revenue from employees of the N. & W. R. R. was collected by the paymaster through deductions in their pay. The railroad charged the company 5% commission on all such collections.

The water works expense account as shown on the books has been separated into operation and maintenance. To operation has been added $4,700.00, which is the portion of the General Expense Account that is believed should apply to the water works as an operating charge. This amount may be called a pro rata amount, as it bears the same ratio to the total General Expense, as the capital invested in water works plant bears to the total capital invested in the water plant, land and houses, shown by the balance sheet for December 31, taken from the Minute book and included with all other balance sheets, as a part of this report. Hereinafter
846 the use of the word- "pro rata" will be taken to indicate the same ratio as the ratio of the capital invested in water works to the total invested in water plant, land and houses, as shown on the balance sheet for any year in question.

A 2½% dividend (or $6,300) on the capital stock was declared for the year. This dividend was prorated in arriving at the portion that may be said to have been derived from the water works portion of the business.

Date.	Amount.	Acct.	Description.
	$8.10	T	W. Thompson—Hauling to Tank.
5/ 1.	13.40	T	Hauling and Labor on Tank.
5/ 8.	290.98	T	Glamorgan Co.—Pipe and Fittings.
5/12.	56.00	T	N. Scanland—Excavating and Masonry.
5/13.	11.16	T	Wythe L. & Z. Co.—Lead.
5/19.	147.73	T	N. & W.—Erecting and Framing.
	4.22	T	" " " —Frt. on Materials.
	15.00	R	Baileys—Forfeit 3 options 4 springs.
5/24.	3.00	T	Hauling Material to Tank.
6/ 2.	44.85	E	W. L. Marshall,—Engineering.
6/ 5.	134.60	P	Payroll—Pipe Line to Tank.
	.55		Express and Telegram.
6/10.	9.02	S	Wythe L. & Z.—Lead for Meter.
7/ 1.	66.86		Frt. and disbursements.
	86.67	E	W. L. Marshall & A. R. Venable—Engineering.
	100.00	T	Fairbanks-Morse Co.—Tank Roof.
7/ 3.	12.00	S	Ball & Co.—3 bbl. cement for meter.
7/ 9.	155.68	P	Glamorgan Co.—Pipe Fittings.
	36.44	T	Priddy & Dunlap—Tank over Flow Tile.
	86.28	T	N. & W. Labor, material and frt.
	20.00	E	A. R. Venable—Engineering.
7/31.	3.00		Disbursements.
	2.00		Telegrams.
	323.02	W	Rogers & O'Brien—Trenches for new spring mains.
	216.00	S	Nat'l Motor Co.—4" meter and fish trap.
	74.77	T	N. & W. Motive Power Charges.
8/19.	29.25	P	Wythe Lead Co.—Lead.

1890—*Plant Account.*—Continued.

Date.	Amount.	Acct.	Description.
	172.41	W	Payroll—Extension to springs.
	88.00	R	Mrs. Hale & Davidson—Rt.-of-Way.
	10.08	P	Glamorgan Co.—Pipe.
8/20.	20.00	E	A. R. Venable—Rodman.
8/25.	112.96	P	N. & W.—Frt. 1 car load 3" pipe.
8/30.	3.60	P	Smith & Courtney—Hemp.
	150.57	P	Wythe Lead Co.—62 pigs lead.
	620.24	P	R. D. Wood Co.—1 car load 3" pipe.
	4.39		Disbursements.
	20.25		Material and hauling.
	272.01	P	Payroll—Extension to springs.
	488.32	P	O'Brien & Rogers—Extension to Springs.
	28.77		Cather & Bro.—Materials.
9/ 6.	100.00	L	A. W. Reynolds—Legal Costs—Purchase 4 Springs.
9/13.	7.27	P	N. & W. Frt. Material for spring mains.
848			
9/27.	$1,537.13	P	R. D. Wood & Co.—4 car loads pipe for spring mains.
	40.95	P	Wythe Lead Co.—15 pigs lead for spring mains.
	2.28	S	Glamorgan Co.—2 sleeves for meter.
	113.85	E	W. L. Marshall—Engineer on Spring Mains.
	48.46	P	W. J. Monroe—Salary " " "
	6.26	P	N. & W.—Freight on materials " "
	241.52	P	Payroll—Laying Spring Mains.
	71.25	P	Hauling Pipe, etc. " "
10/24.	135.08	S	Smith-Courtney—Pipe, fittings and tools.
	12.60		E. S. Jones—Cement.

	131.09	P	N. & W.—Freight on pipe.
10/27.	503.25	P	R. W. Wood Co.—Pip- and castings.
10/31.	5.10	E	Britt & Thomson—Rodman and chainman.
	60.00	P	W. J. Monroe—Supt. Salary.
	329.23	P	Payroll.
	14.29		Bills.
	7.25	P	Smith-Courtney Co.—Tools.
11/14.	239.83	P	Wythe Lead Co.—Lead.
	266.94	P	N. & W.—Freight on pipe.
11/27.	389.16	P	Hauling and Payroll.
11/29.	63.90	P	W. J. Monroe—Supt. Salary and expense.
	599.78	P	R. D. Wood Co.—3504'—3" pipe.
	87.45	S	Smith Courtney—Yard Hydrants.
12/16.	153.71	P	" " 3065' galvanized pipe.
12/31.	24.34	E	W. L. Marshall—Engineers.
	137.96	B	Lumber for plumbing shop.
	60.00	P	W. J. Monroe—Salary.
	78.50		W. A. Cather—Tools and castings.
	140.90	P	Payroll.
	36.12	S	N. & W.—Freight on hydrants, sinks, etc.
	14,282.10		Water Works Plant.
	3,600.00	R	Four springs from Bailey.
	129.60	R	Bland Street Tank lot .432 acre @ $300 per acre.
	21.90	R	Office Lot .073 acre @ $300 per acre.
	$27,815.17		Total.

1890—*Plant Account.*—Continued.

1890—Income.

Date.	Amount.	Description.
5/ 5.	$127.62	Water Rents, quarter ending 3/31.
6/ 9.	135.00	N. & W. Water rent for April.
7/24.	139.50	" " " " " May.
8/ 8.	147.87	Water rents, quarter ending 6/30.
849		
8/25.	$135.00	N. & W. Water rent for June.
9/26.	642.60	" " " " July and August—Metered.
10/29.	335.44	" " " " September—metered.
11/21.	255.13	Water Rents for quarter ending 9/30.
12/31.	9.00	N. & W. Office Water Rents 2nd and 3rd quarters.
	1,404.56	" Water Rents for quarter ending 12/31.
	$3,331.72	Total.

1890—Operation.

8/19.	$58.94	H. Murphy report as expert on meter.
	.40	Telegram.
8/30.	7.39	N. & W. Commission on water rents.
11/29.	.40	Express on water rents.
	13.21	N. & W. Commission on water rents.
12/31.	71.64	W. H. Calfee—City Taxes.
	$151.98	

	470.00
	$621.98

Pro rata General Expense for Years.

Total.

1890—Maintenance.

Date.	Amount.	Description.
5/ 1.	$13.74	J. P. Melhorn—Repairs to hydrants.
8/19.	15.70	N. & W.—Repair Charges.
	$29.44	Total.

850 Résumé of Plant Account, Income, and Operation for 1890.

Cost of Plant and Property incurred during year		$27,815.17
" " " " at end of year		27,815.17
Income from Service during Year		$3,331.72
Expenditure for Operation during Year	$621.98	
" " Maintenance " "	29.44	
Total Expenditure for Operation and Maintenance during year		651.42
Net Return Applicable to Depreciation, Bond Interest and Dividends—1890		$2,680.30

Résumé of Bond Interest and Dividends for 1890:

Pro Rata Interest Paid on Outstanding Securities for year	0.00
" " Dividends paid for year	$855.00
" " Amount Withdrawn for Bond Interest and Dividends in 1890	$855.00

851 1891.

During the year the distribution system was further developed and a number of domestic services installed. The company laid the services complete, including the yard hydrants and plumbing within the owners' premises, charging the consumer for the work inside of the property line. The total of such charges for the year is deducted from the plant account total.

The domestic revenue increased to a small degree. Most of the revenue came from the N. & W. R. R., who charged a commission on water rent collections from their employees, in the same manner as in the previous year.

The General Expense item for the year as shown on the books of the company has been prorated, and the amount chargeable to water works only has been applied to the operating charges.

A 10% dividend ($25,200) was declared, and has been prorated to determine the portion of it that should be considered as having been due to water works operation.

On December 31, 7% bonds were issued in the amount of $125,000.

Date.	Amount.	Acct.	Description.
	$18.15		N. & W.—Freight on material.
1/14.	5.05	S	D. H. Matson—Plumbing Supplies.
	62.65	P	Eddy Valve Co.—12 valves.
	96.20	S	Smith Co.—18 hydrants.
	10.72		N. & W.—Labor.
	126.60		Payroll.
1/31.	18.52	E	W. L. Marshall—Engineer.
	12.05	P	Rogers & O'Brien—Explosives.
	60.00		W. J. Monroe—Foreman—Salary.
	5.00	L	A. W. Reynolds—Local services.
2/14.	11.71		N. & W.—Freight.
2/28.	37.54	E	W. L. Marshall & Ass'ts—Engineering.
	60.00		W. J. Monroe—Foreman Salary.
	150.46		Payroll.
	6.10		Labor and hauling.
	31.98	P	R. D. Wood—Specials.
	19.32	S	G. Bargamin—Waste Pipe.
	5.25		Smith C. Co.—Tools.
	.29	S	N. & W.—Freight on Service Fittings.
3/11.	101.18	S	Smith C. Co.—Service Fittings.
	6.00	L	S. P. Pearis—Recording deeds.
3/28.	.35		Express.
	23.08	E	W. L. Marshall—Engineer.
	60.00		W. J. Monroe—Foreman salary.
	1.65		Harvy & Campbell—Hardware.
	171.51		Payroll.
4/ 8.	.58		N. & W.—Freight on tools.

1891—*Plant Account.*—Continued.

Date.	Amount.	Acct.	Description.
4/28.	10.50		Smith-Courtney Co.—Tools.
	4.00		Ball Ptg. Co —Payrolls.
	2.50		Boughman Sta. Co.—Bookson Res.
	34.55		Smith Courtney Co.—Tools.
4/30.	.80		Express.
	41.54	E	W. L. Marshall & Ass't—Engineering.
	.90		Harvy & Campbell—Hardware.
	1.10		Douglass & Devine—Sheet tin.
	318.53		Payroll.
5/11.	146 06	P	N. & W.—Freight on pipe.
5/18.	.52	S	" " " fittings.
5/27.	12.58	P	" " " pipe specials.
5/29.	61.40	P	" " " pipe.
5/18.	10.59		Huff, Andrews—Feed.
	948.38	P	Glamorgan Co.—2 car load 4" pipe.
	147.54		Smith Courtney & Co.—Gum hose.
5/29.	198.00	S	National Meter Co.—4" Gem meter.
	16.00	T	P. F. Hoppe—2-6" pressure gages.
853			
5/30.	$532.70	P	Glamorgan Co.—1 car load 3" pipe & fittings.
	7.50	P	" " 2 bales oakum.
	244.17	P	Wythe Lead Co.—100 pigs lead.
	.60		Express.
	16.80	P	Gooch & McCue—1,200′ lumber.
	12.73	P	L. A. Lawder—Explosives.

	2.75	E	W. L. Marshall—Expense.
	65.00		W. J. Monroe—Foreman salary.
	40.00		Chas. Suters— " ass't salary.
	578.02		Payroll.
			"
6/ 4.	10.00		N. & W. Freight.
6/12.	50.53		" "
6/25.	75.46		" "
6/29.	68.23		" "
6/30.	5.46		
6/11.	419.81	P	Glamorgan Co.—Pipe.
6/25.	612.68	P	" " "
6/29.	614.77	P	" " "
	371.60	P	Smith-Courtney Co.—Pipe, Valves, Hydrants, hose, etc.
	23.77		Huff A. & Thomas—Feed.
	24.60	P	Jones & Thorne—Explosives.
	.50		Express.
	42.69	E	W. L. Marshall & Assistants—Engineers.
	121.69		W. J. Monroe—Foreman and assistants' salaries.
	703.99		Payroll.
	8.27	S	N. & W.—Freight on valves and ½" pipe.
7/10.	57.70	P	" " 1 car load 3" and 4" pipe.
7/29.	7.50		Harvy & Campbell—Hardware.
7/11.	253.81	S	Smith-Courtney Co.—½" pipe and valves.
7/16.	3.00	L	S. P. Pearis—Recording deeds to 4 springs.
	1.00		Express on payroll and telegram.
7/31.	81.11	E	W. L. Marshall and Assistants—Engineers.
	484.28		Payroll.
	5.73	E	W. L. Marshall—Labor and material.

1891—*Plant Account.*—Continued.

Date.	Amount.	Acct.	Description.
8/ 8.	1.81	S	N. & W.—Freight on meter for Inn.
8/17.	67.33	P	" " " 1 carload 3" pipe.
8/22.	4.48	P	" " " 6" "
8/ 8.	68.00	S	Union Meter Co.—2" meter for Inn.
8/17.	82.81	S	Smith-Courtney Co.—Fittings, hydrants, etc.
	122.76	P	Wythe Lead Co.—2,728 lbs. lead.
8/31.	3.85		M. W. Bryan—Express and traveling expenses.
	23.16	S	G. & A. Borgamin—Sinks and lead pipe.
	82.88	S	Smith-Courtney Co.—2,003'—½" galv. pipe.
	952.22	P	Glamorgan Co.—4,008'—3"; 1,008—4"; 72'—6" pipe.
854			
8/31.	$51.50	E	W. L. Marshall and Assistants—Engineers.
	380.35		Payroll.
	39.33		Brick and hardware.
9/30.	.50		M. W. Bryan—Express on Payroll.
	188.29		Payroll.
	27.19		W. L. Marshall & G. H. Hill—Salaries.
	18.40	P	N. & W.—Freight 708'—3" pipe.
	9.15	P	Sleeve, valve, etc.
10/5.	1.42	S	N. & W.—Freight on meter for car shed.
	30.00		W. J. Monroe—Salary.
10/6.	46.00	S	J. C. Otis—1½" meter.
	123.25	P	Glamorgan Co.—708'—3" pipe.
	44.42	P	Smith-Courtney Co.—239'—1½" pipe and 24'—½" cocks.
10/27.	5.86		N. & W.—Freight on meters, lead & stop boxes.
10/28.	2.25	L	W. H. Witten—Land transfer deed to springs.

			Payroll and hauling.
10/31.	178.84		
	3.25	S	Meter pit covers.
	8.33		G. H. Hill, Supt.—Salary.
	92.00	S	J. C. Otis—2—1½" meters.
11/14.	216.43		Payroll.
11/30.	5.65	S	Meter pits.
	7.00	S	Theo. Thomson—Salary on meter installation.
	25.47	S	Smith Courtney Co.—Galvanized pipe & fittings.
12/7.	12.03	S	G. & A. Bargamin—stop boxes.
12/9.	44.77		N. & W.—Labor and material.
12/10.	202.73		Payroll and bills.
12/31.	8.33		G. H. Hill—Salary.
	15.55		Teamster and hardward.
	$11,802.85		
	642.33		Deduct cash for Plumbing Collections.
	$11,160.52		

855

1891—Income.

Date.	Amount.	Description.
3/9.	$571.29	N. & W. January Consumption.
4/6.	446.50	" February "
4/25.	261.37	Local water rents, quarter ending 3/31.
4/30.	4.50	N. & W. office rents, " " "
5/5.	627.14	" March Consumption.
6/8.	518.94	" April "
7/10.	368.94	" May "
7/25.	318.48	Water rents, quarter ending 6/30.
8/28.	359.11	N. & W. June consumption.
	4.50	" office water rent quarter ending 6/30.

1891—*Plant Account.*—Continued.

Date.	Amount.	Description.
9/24.	35.25	Water Rent, Bluefield Inn, " " "
9/30.	651.04	N. & W. July Consumption.
10/27.	732.81	" August "
11/11.	4.50	" office water rents " " 9/30.
	364.13	Water collections " " "
11/29.	34.56	Bluefield Inn, water rent " " "
11/30.	605.79	N. & W. September consumption.
12/26.	478.03	" October "
12/31.	821.37	" Nov. & Dec. "
	476.03	Water rents for quarter ending 12/31.
	$7,684.28—Total.	

1891—Operation.

1/14.	$4.30	Rosenbaum Bros.—Office Shades.
	10.19	N. & W. Commission on Water Rents.
3/11.	5.85	A. L. Fugua—7' galvanized pump.
4/30.	.40	Express on water rents.
	13.69	N. & W. Commission on water collection.
7/24.	.80	Express on water rents and telegrams.
8/11.	17.91	N. & W. Commission on water rents.
10/6.	2.75	Bell Printing Co.—1,000 water rent bill forms.
	20.16	N. & W. 5% Commission on water rents.
11/30.	137.25	R. M. Baldwin—City Taxes.
	$213.30	
	515.00	Pro rata general expense for year.
	$728.30—Total.	

856 Résumé of Plant Account, Income and Operation for 1891.

Cost of Plant and Property incurred prior to 1891	$27,815.17
" " " " " " during year	11,160.52
Total Cost of Plant and Property at end of Year	$38,975.69
Income from Service during year	$7,684.28
Expenditure for operating during year	$728.30
" " maintenance " "	0.00
Total Expenditure for Operating & Maintenance during year	728.30
Net Return Applicable to Depreciation, Bond Interest and Dividends	$6,955.98

Résumé of Bond Interest and Dividends for 1891.

Pro Rata Interest Paid on Outstanding Securities for Year	0
Pro Rata Dividends paid for year	$3,690.00
Pro Rata Amount withdrawn for Bond Interest and Dividends in 1891	$3,690.00

857 1892.

The Beaver Pond Spring was purchased in May, and later in the year the old wooden tank was torn down and the present Bland St. tank erected on the same site. The Beaver Pond pumping station was built, and consisted chiefly of a 1 M. C. D. Worthington duplex pump and an Erie horizontal return tubular boiler, housed in a rough frame structure. The station was connected to the Bland St. tank with a 10" C. I. pipe line.

Additional mains and services were laid, which increased the domestic revenue. The collections made on plumbing work within consumers' premises has been deducted from plant account. The N. & W. R. R. charged their regular commission of 5% on revenue deducted from wages of their employees.

The General Expense account was pro rated to arrive at the amount to be added to the operating expense of the water works department.

A 6% dividend, equal to $15,120, was declared, and has been pro rated in determining the portion applicable to the water works business.

The interest on bonds has also been pro rated.

Date.	Amount.	Acct.	Description.
1/ 8.	$191.59	S	Smith Courtney Co.—1,023′—1½″ pipe, Yd. Hydts. etc.
	65.55	P	Wythe Lead Co.—1,380 lbs. lead.
	6.54	P	Glamorgan Co.—Specials.
1/30.	139.04		Payroll and salaries.
	37.50	E	G. H. Hill—Engineering.
	.91	S	N. & W.—Freight on hydrants.
	19.75		Teamster and blacksmithing.
2/24.	12.97		Thos. Huff—Feed.
	234.92	P	Glamorgan Co.—1,104′—3″ pipe and fittings.
	26.50	P	G. A. Bargamin—7 valve boxes.
2/29.	10.90	P	W. A. Cother—Labor and material.
	60.64		Superintendent and assistant—payroll.
	203.15		Payroll and blacksmithing.
3/19.	62.45	S	Smith Courtney Co.—12 yard hydrants.
	13.44	S	G. A. Bargamin—12 sinks and brackets.
	63.98	P	Wythe Lead Co.—25 pigs lead.
	38.25	S	Union Meter Co.—⅝″ meters.
	24.31	E	E. Graves—Engineering.
	7.36		J. Dingee—Expense.
3/21.	30.00	R	E. J. Bailey—Right-of-Way to 4 springs.
3/31.	6.10	R	Option and Agreement.
	161.43		Payroll.
	27.63		Freights and blacksmithing.
	181.00	S	W. A. Cather—Plumbing material.
4/19.	10.00		Booth & Blair—Water Analysis.
	24.31	E	E. Graves—Hydraulic Engineering.
	10.32	S	G. A. Bargamin—Lead pipe.

	10.32	S	G. A. Bargamin—Lead pipe.
	5.00	R	A. W. Reynolds—Preparing right-of-way deeds.
4/30.	1.94	W	Telegrams about springs.
	86.67		Payroll and options.
	47.32	T	M. F. Normoyle—Tank site excavation.
	22.34	E	G. H. Hill—Engineering.
	21.66		W. J. Monroe—Foreman salary.
	100.00		L. C. Tabb—Special Compensation.
5/ 7.	43.51	P	N. & W.—Freight 1 carload pipe.
5/ 9.	279.91	P	" " 7 " "
5/18.	79.99	P	" " 2 " "
5/21.	4,500.00	W	Carmack Bailey—Beaver Pond Spring #23.
5/10.	100.00	R	H. B. Bailey—Right-of-way.
5/12.	65.00	R	J. R. Calfee "
	40.00	R	T. M. " "
	25.00	R	Eliza Bailey "
	224.66	R	Jno. P. Williams "
5/23.	5,138.37	P	Glamorgan Co.—10 carload 10" pipe.
859			
5/31.	$4.93		Traveling expenses and telegrams.
	50.62		Payroll.
	71.67		G. H. Hill—Salary and expenses.
	20.00		T. Thomson—Time keeping.
	16.76		L. Evans—Blacksmithing.
	25.00		W. J. Monroe, foreman—salary.
	267.47	P	W. Thompson—Hauling Pipe.
	168.41	T	M. F. Normoyle—Tank site excavation.
	15.93		Harvy & Campbell—Hardware.
	5.45		W. A. Cather—Tools.
	677.67	P	L. A. Lowder—Unloading, trench & cover pipe.

1892—Plant Account.—*Continued.*

Date.	Amount.	Acct.	Description.
	280.77	P	Payroll—Pipe laying.
	3.29	P	F. Rarer—Fence pickets.
6/ 6.	124.67	P	N. & W.—Freight 3 carloads pipe.
	172.33	M	" " on pump and boiler.
6/20.	599.28	P	Wythe Lead Co.—13,028# lead.
6/28.	683.00	M	Erie City Iron Works—1 boiler.
	48.62	E	E. Graves—Hydraulic Engineering.
	8.00	M	L. Pulasky—Lubricator.
	57.35	E	E. Graves—Expenses.
	61.56	M	H. Belfield Co.—2—10" check valves.
	19.50	P	Schlichter Co.—300# jute.
	13.09	P	Huff Andrews—Feed.
	21.61	P	Brown and Johnson—Explosives.
6/29.	1,664.56	P	Glamorgan Co.—3 carload 10" pipe and specials.
6/30.	35.17		M. W. Bryan—Travel and telegram.
	6.00		W. H. Whitten—Recording 4 deeds to Rt.-of-Way.
	8.00	W	T. E. George— " deed to B. P. Spring.
	426.63	P	Payrolls—Pipe laying and covering.
	121.72		G. H. Hill—Salary.
	20.00		T. Thomson—Time keeping.
	30.95	M	W. A. Cather—Fittings.
	12.00	M	W. D. Calfee—Hauling Boiler.
	35.35		W. Thompson—Hauling pump and 10" pipe.
	19.60		L. Evans—Blacksmithing.
	633.72		L. A. Lowder—Excavating, ditching, etc.
	208.02		N. Scanland, Foundations, pump, boiler, tank.
	35.00		R. Smith—Labor and team.

	1.89		Harvy & Campbell—Hardware.
	13.81	T	M. F. Normoyle—Grading for tank.
7/16.	136.34	M	Smith Courtney Co.—Valves, Fittings, etc.
	40.11	B	W. D. Calfee, Lumber for pump house.
7/19.	40.07	W	" " " " fencing.
7/30.	38.32		M. W. Byran—Traveling expenses and telegrams.
	11.19		L. C. Tabb—Livery.
	44.44		Huff Andrews—Feed.
860			
7/30.	$78.75	M	Pancoast & Moule—valves and fittings.
	24.31	E	E. Graves—Hydraulic engineering.
	57.33	E	" Expenses.
	59.13		G. H. Hill—Salary and expenses.
	20.00		T. Thomson—Timekeeping.
	25.67	W	A. Loeher—Building fence around spring.
	232.00	B	H. Shufflebarger—Building pump house.
	35.00		R. Smith—Labor and team.
	151.68	P	Payroll—Laying and covering pipe.
	35.91		G. H. Hill—Salary and Expenses.
	.86	P	Blacksmithing for pipe gang.
	132.41		Payroll—Pipe extension and plumbing.
	173.40	T	N. & W.—Freight on tank material.
	33.00	R	H. M. Nash—28 acknowledgments to right-of-way deeds.
8/10.	772.00	M	H. R. Worthington—Pump.
8/16.	5.21	M	N. & W.——Unloading boiler.
8/18.	121.53	E	E. Graves—Hydraulic Engineer.
8/19.	11.50	M	Riter & Conley—Engine bed plates.
	90.90	P	Glamorgan Co.—120'-10" pipe and specials.

1892—Plant Account.—*Continued.*

Date.	Amount.	Acct.	Description.
8/22.	33.76	E	E. Graves—Expenses.
8/31.	3.35		L. C. Tabb— "
	19.25		G. H. Hill—Salary.
8/19.	91.67		Smith Courtney Co.—2014'-1" pipe and fittings.
	20.32	S	G. A. Bargamin—Lead pipe.
8/31.	268.99	P	Payroll for pipe line work.
	9.87	P	R. Smith—Hauling pipe.
	44.00		G. H. Hill—Salary.
	.90		Blacksmithing.
	2,017.07	T	Riter & Conley—Tank account.
9/30.	21.50		G. H. Hill—Salary.
	4.49	P	J. H. Cather—Special castings.
	281.04	E	E. Graves—Hydraulic Engineer & Expenses.
	1.32		Labor.
	32.61		G. H. Hill—Salary, freight and expenses.
	20.00		T. Thomson—Timekeeping.
	17.50		R. Smith—Teaming.
	15.82	P	J. H. Cather—Castings.
	334.62	P	Payroll—Laying mains.
	13.64		Thos. Huff—Feed.
	25.92	S	G. A. Bargamin—Plumbing Supplies.
	644.17	T	Riter & Conley—Tank Account.
	15.36	T	" " " " "
10/31.	2.20		L. C. Tabb—Traveling Expenses.
	125.67		G. H. Hill—Salary and payroll.
	19.11	P	J. H. Cather—Castings.

	21.50		J. R. Calfee—Wood.
	154.68	E	E. Graves—Salary and Expenses.
861			
10/31.	$234.74	P	Payroll—Mains.
	40.66		G. H. Hill—Salary.
	93.13	S	J. H. Cather—Plumbing material.
	17.50		R. Smith—Teaming.
	6.00	M	Cement and labor on pump.
11/11.	36.78		G. H. Hill—Salary and Expenses.
	30.00		J. S. Aloft—Watchman at Beaver Pond.
	2.76	E	Surveying.
	84.88	S	Smith-Courtney Co. & G. A. Borgamin—Plumbing supplies.
	11.02		G. H. Hill—Salary.
	15.00	P	R. Smith—Teaming.
	278.97	P	Payroll on pipe work.
	41.18	E	E. Graves—Expenses.
12/16.	100.00		L. C. Tabb—Special Compensation.
12/22.	2.75		G. H. Hill—Livery.
12/31.	1.90		W. A. Cather—Bill.
	233.92	P	Payroll—Mains.
	53.96		G. H. Hill—Salary and Expenses.
	171.08	S	W. A. Cather—Plumbing Supplies.
	17.50		R. Smith—Teaming.
	$27,246.03		
	760.04		Deduct for Plumbing Collections.
	$26,485.99—Total.		

1892—Plant Account.—*Continued.*

Date.	Amount.	1892—Income. Description.
3/14.	$798.07	N. & W. R. R. January Consumption.
4/29.	1,601.92	" February & March Consumption.
5/30.	511.70	Water Rents Quarter Ending 3/31.
5/30.	18.52	" " Bluefield Inn, Quarter Ending 3/31.
6/ 4.	11.75	N. & W. Water Rents office.
6/ 4.	873.56	" R. R. April Consumption.
7/30.	665.36	Water Rents—Quarter Ending 6/30.
8/ 6.	4.50	N. & W. R. R. Water rent office, quarter ending 6/30.
8/24.	958.46	" May Consumption.
8/26.	8.99	Water Rent Bluefield Inn, Quarter ending 6/30.
9/30.	1,209.53	N. & W. R. R. June & July Consumption.
9/30.	49.13	" Water rent station for July.
11/17.	638.96	Water Rents, Quarter ending 9/30.
862		
11/17.	$11.04	Water Rents Bluefield Inn, Quarter Ending 9/30.
12/31.	1,080.42	N. & W. Yard & Sta. Water Rents—Aug. Sept. Oct.
	676.43	" " " " " " Nov.-Dec.
	700.00	Water Rents—Quarter Ending 12/31.
	$9,818.34—Total.	

1892—Operation.

1/30.	$5.00	Theo. Thomson—Reading meters.
2/ 5.	23.64	N. & W. Commission on Water Rents.

2/29.	10.00	Theo. Thomson—Reading Meters.
3/31.	10.00	" " " "
4/30.	15.00	" " " "
5/31.	15.00	" " " "
	27.10	N. & W. Commission on Water Rents.
6/30.	10.00	Theo. Thomson—Reading meters.
7/30.	33.94	N. & W. Commission on Water Rents.
	1.40	A. W. Robbins—Advertising rents due.
	10.00	Theo. Thomson—Reading meters.
8/31.	1.50	Printing.
	10.00	Theo. Thomson—Reading Meters.
9/30.	10.00	" " " "
10/31.	20.00	" " " "
	1.50	Printing adv. rents due.
11/16.	11.25	Refund over remittance.
	32.16	N. & W. Commission on Water Rents.
11/26.	285.24	State and County taxes on plant.
11/21.	138.38	City Taxes on plant.
	10.00	Theo. Thomson—Reading meters.
12/31.	20.00	" " " "
	$701.11	
	1,070.00	Pro rata general expense for year.
	$1,771.11—Total.	

1892—Plant Account.—*Continued.*

1892—Maintenance.

Date.	Amount.	Description.
2/24.	$1.64	N. & W. Materials supplied.
5/31.	2.15	Repairs.
6/28.	7.69	N. & W. Materials for repairs.
6/30.	16.22	Payroll for repairs.
11/11.	1.75	Soldering pipes.
	9.33	N. & W. Material for repairs.
12/22.	25.00	W. J. Monroe, Sunday services on repairs.
	10.00	C. B. Suiter " " " "
	$73.78—Total.	

863 Résumé of Plant Account, Income, and Operation for 1892.

Cost of Plant and Property incurred prior to 1892.....	$38,975.69
" " " " " " during year.....	26,485.99
Total Cost of Plant and Property at end of Year.	$65,461.68
Income from service during year.....	$9,818.34
Expenditure for Operating during year.... $1,771.11	
" " Maintenance during year.. 73.78	
Total Expenditure for Operation and Maintenance during year.....	1,844.89
Net Return Applicable to Depreciation, Bond Interest and Dividends.....	$7,973.45

Résumé of Bond Interest and Dividends for 1892.

Pro Rata Interest Paid on Outstanding Securities....	$755.00
" " Dividends for Year.....	3,360.00
" " Amount withdrawn for Bond Interest and Dividends in 1892.....	$4,115.00

864 1893.

A small amount of cast iron and galvanized mains were laid, as well as a number of new services. The plumbing work done by the company in connection with the installation of services, was charged to the consumer in the usual way, and has been deducted from the plant account charges in arriving at the actual cash investment in the plant. During the year W. W. Sanders began an injunction suit to prohibit the company from using the water at Beaver Pond, claiming that the supply necessary for the watering of his stock became too limited. The expense of this suit which was not finally won by the Company until 1902, has been regarded as a part of plant account, it being considered as a part of the cost of the Beaver Pond Spring.

In this year the N. & W. R. R. still continued to be the chief consumer, and in the regular way charged the company for collections made through their paymaster.

A 3½% dividend amounting to $8,820 was declared, and as well as General Expense and Bond Interest, has been pro rated to arrive at the amounts applicable solely to water works.

Date.	Amount.	Acct.	Description.
1/18.	$4.64	M	Packing for Pump Beaver Pump.
	20.81		Hill Salary and Expense.
	87.70	P	Payroll—Mains.
2/28.	105.14		Traveling, Telegrams & Blueprints.
	7.82		Hill—Telegrams and hauling.
2/21.	82.92	S	Plumbing material.
	184.64	S	" Labor.
	67.53	P	Lead and other material.
3/31.	63.12	S	Plumbing Labor.
	72.82	S	" material.
	7.48		Hill—Salary and Expenses.
4/19.	427.71	E	E. Graves—4 months' salary and expenses—engineer.
4/29.	18.65	W	Constructing, measuring dams.
	7.45		Hill—Salary and expenses.
4/19.	40.13	P	20 lengths 3" pipe.
4/29.	7.48	P	Freight and hauling 3" pipe.
5/12.	35.00	E	Beaver Pond Survey.
5/31.	26.67	E	Hill—Engineering Testimony.
	12.76	S	Meter Vault.
6/13.	11.75	S	Services and expenses.
	6.00		Livery.
	18.17	S	Lead Waste Pipe.
7/27.	84.57	P	20 lengths 6" pipe.
	18.21	P	Freight on 6" pipe.
7/31.	14.16	T	Masonry at Tanks.
	23.17	T	150'—6" drain pipe for tank.
	3.05	P	Hauling Pipe.

	21.31	T	Labor placing drain pipe.
7/14.	15.00	S	Meter Vault Cover.
7/31.	40.95	S	5/8" and 1½" meter.
	15.53		G. H. Hill, salary, express, freight.
8/31.	5.01	T	Payroll—Overflow for Tank.
	37.09		G. H. Hill, 10 days—freight and hauling hydts.
	2.12	T	Tank overflo- lumber.
9/18.	142.86	S	24 Yard Hydrants.
	51.54		G. H. Hill, 9 days—Express.
10/ 5.	4.28	S	Setting meters.
	65.00	T	1 4" pressure regulator.
	22.24		Freight, hauling and labor on regulator.
11/30.	43.29	E	Survey Abbs Valley.
	2.42	E	" " "
	78.10	S	2,162½' ½" galvanized pipe.
866			
12/21.	$300.00	L	A. W. Reynolds—Legal services, W. Sander's case.
	2.16		Payroll.
	57.80		31 cords wood and Hill time on Abb V. Survey.
	10.59	S	24 cocks, etc., plumbing supplies.
	$2,376.84		
	236.02		deduct for plumbing collections.
	$2,140.82		—Total.

1893—Plant Account.—*Continued.*

Date.	Amount.	Description.
		1893—Income.
5/30.	$579.37	Domestic consumption, Quarter Ending 3/31.
6/14.	169.37	" " " " "
	27.20	Bluefield Inn " " " "
7/31.	5,387.18	N. & W. R. R. " January to July Inclusive.
9/ 1.	529.17	" " " August.
9/30.	395.36	" " " September.
9/30.	550.00	Domestic " Quarter Ending 6/30.
10/31.	216.89	" " " " 3/30.
	576.67	N. & W. R. R. " October.
11/23.	410.00	Domestic " Quarter Ending 9/30.
12/30.	100.00	" " " " 9/30.
11/30.	547.41	N. & W. R. R. " November.
12/30.	528.89	" " " December.
	4.13	" " " "
	41.34	Bluefield Inn " July to December inclusive.
	260.59	Domestic " Quarter Ending 9/30.
	800.00	" " " " 12/31.
	$11,124.04—Total.	
		1893—Operation.
1/31.	$20.00	Reading Meters.
2/28.	15.00	" "
3/31.	34.30	Commission on Collection.
	23.33	G. H. Hill—Salary.

	15.00	Reading meters.
4/29.	15.00	" "
	116.57	Payroll.
	14.40	G. H. Hill—4 days.
867		
5/31.	$13.30	G. H. Hill—4 days.
	15.00	Reading Meters.
	82.19	Payroll.
6/20.	39.05	Commission on Collection.
	38.98	G. H. Hill—11 days.
	10.00	Reading meters.
	82.75	Payroll.
7/10.	20.77	G. H. Hill—6 days.
	10.00	Reading meters.
	66.41	Payroll.
8/31.	67.33	"
	23.33	G. H. Hill—7 days.
	10.00	Reading meters.
9/30.	52.99	G. H. Hill—15 days, hardware.
	20.00	Reading meters.
10/ 5.	91.37	Payroll.
10/31.	80.79	"
10/26.	38.57	Commission on Collection.
10/31.	20.00	Timekeeping and reading meters.
11/21.	17.31	G. H. Hill.
	20.00	Reading meters.
	83.39	Payroll.
12/21.	60.00	Xmas Donations.

1893—Plant Account.—*Continued.*

Date.	Amount.	Description.
12/30.	544.52	State and County Taxes 1893.
	76.76	Payroll.
	58.45	G. H. Hill—Salary and expenses.
	20.00	Reading meters.
	5.57	Office Supplies.
4/30/94.	300.00	City Taxes 1893.
	$2,222.46	
	975.00	Pro Rata General Expense for year.
	$3,197.46—Total.	

1893—Maintenance.

1/31.	$91.99	General Repairs.
2/28.	48.76	Supt. General Repairs.
3/41.	53.46	Plumbing repairs.
4/29.	8.85	Labor and materials.
5/31.	.48	Supplies.
10/ 5.	40.61	Plumbing repairs.
10/26.	5.10	Supplies.
10/31.	41.54	G. H. Hill—General Repairs.
	$295.79—Total.	

868 Résumé of Plant Account, Income, and Operation for 1893.

Cost of Plant and Property incurred prior to 1893		$65,461.68
" " " " " " during year		2,140.82
Total Cost of Plant and Property at end of year.		$67,602.50
Income from Service during year		$11,124.04
Expenditure for Operating during year	$3,197.46	
" " Maintenance " "	295.79	
Total Expenditure for Operation and Maintenance during Year		3,493.25
Net Return Applicable to Depreciation, Bond Interest and Dividends		$7,630.79

Résumé of Bond Interest and Dividends for 1893.

Pro Rata Interest paid on Outstanding Securities	$1,120.00
" " Dividends for year	525.00
" " Amount Withdrawn for Bond Interest and Dividends in 1893	$1,645.00

869 1894.

In 1894 a small amount of galvanized mains, and a corresponding number of services were laid, the total plumbing collections being deducted from plant account. Over one-third of the total amount spent as plant charges, was in the nature of legal expenses, practically all of which was in connection with the Sanders suit.

About two-thirds of the revenue came from the N. & W. R. R. and one-third from domestic consumers. The N. & W. R. R. charged the usual commission for water rent collections made by their paymaster from employees.

A 1% dividend amounting to $2,520 was declared, and as well as General Expense and Bond Interest has been prorated to arrive at the amounts applicable solely to the water works business.

Date.	Amount.	Acct.	Description.
1/31.	$.50		Telegram.
2/ 9.	4.60	F	Bluestone Survey.
	90.70		G. H. Hill—15 days and traveling expenses to Philadelphia.
	300.00	L	A. J. & S. D. May—Prof. Services in Appeal Suit.
	6.25	L	C. E. Harmon—U. S. Deputy Marshall Expense in "citation."
2/27.	25.00	L	Deposition with U. S. Circuit Court of Appeals.
	78.15	L	Costs in Circuit Court of Abingdon.
	175.00	L	Deposition with Appellate Court to print record of Appeal.
2/28.	23.15	L	Miscellaneous Legal Expenses.
3/17.	6.92		Payroll and 1 barrel cement.
	25.10		G. H. Hill—6 days—supplies and expenses.
4/16.	3.35		Expense and telegram.
	16.67		G. H. Hill—5 days Bluestone survey.
	10.50	T	Payroll—Tank overflow drain.
4/25.	300.00	L	A. W. Reynolds—Legal Services.
4/16.	1.03	P	Freight and hauling fire hydrant.
4/27.	170.79	P	½", 1" and 1½" galvanized pipe.
5/11.	70.76	P	Payroll—mains.
5/12.	41.53	P	G. H. Hill—time and expense—mains.
6/ 9.	45.75	L	Printing Appellants' brief.
6/11.	16.55		G. H. Hill—4 days.
	18.36	S	Payroll—Plumbing.
6/29.	57.22	S	½" galvanized pipe and ells.
7/11.	36.97		G. H. Hill—9 days—freight and hauling.
	19.06	S	Payroll—plumbing.
8/20.	23.75	L	Deputy Marshall's expense in injunction suit.
8/ 9.	20.43		Payroll.
	28.80		G. H. Hill—8 days.

	1.68	S	Plumbing Supplies.		
9/14.	12.76	S	Payroll—Plumbing.		
	33.88		G. H. Hill—14 days and hauling.		
10/12.	4.72	S	Payroll—Plumbing.		
	10.80		G. H. Hill—3 days on Pipe System Map.		
10/ 3.	9.70	L	Balance Costs U. S. Circuit Court of Appeals.		
10/31.	8.78	L	Telegrams incident to Decision at Richmond.		
11/15.	28.18	M	Payroll—Starting Pump.		
	40.33	M	G. H. Hill—10 days—bills account pump.		
11/30.	14.28	L	Additional Costs in Chancery suits.		
	5.52	L	Telegram regarding Richmond decision.		
11/15.	3.31	S	Payroll—Plumbing.		
12/ 6.	4.50	M	Packing Rings for pump.		
12/ 8.	4.90	L	Costs—W. Sanders' Injunction Suit.		
871					
12/11.	8.85	L	Costs Town of Graham Injunction Suit.		
	15.47		Payroll.		
	69.33		G. H. Hill—7 days and telephone line.		
12/22.	11.00	L	Cost copies of Record, Decree and Opinion.		
12/31.	9.73		Traveling expenses and telegrams.		
12/11.	5.80	S	Payroll—plumbing.		
	$1,920.41		Deduct for Plumbing Collections		$697.89
			" " Refund of Court Costs in Injunction Suits..		300.67
					$998.56
	998.56				
	$921.85		Total.		

1894—Plant Account.—*Continued.*

Date.	Amount.
1/31.	$575.84
2/28.	553.45
3/31.	556.91
4/30.	492.46
5/24.	4.13
5/31.	439.77
6/30.	464.65
6/ 9.	280.11
7/24.	10.24
7/31.	272.00
7/31.	395.84
8/31.	365.75
8/31.	4.13
8/20.	90.00
9/29.	306.48
10/31.	441.59
10/12.	7.50
11/27.	4.13
11/27.	763.36
11/21.	300.00
12/31.	335.50
12/31.	2,347.89
	$9,011.73
	392.14
	$8,619.59

1894—Income.

Description.		
N. & W. R. R.	Consumption	in January.
"	"	" February.
"	"	" March.
"	"	" April.
" Office	"	quarter ending 3/31.
"	"	in May.
"	"	" June.
Domestic	Consumption	quarter ending 3/31.
Bluefield Inn	"	" " " "
Domestic	"	" " " "
N. & W. R. R.	"	in July.
"	"	" August.
" Office	"	quarter ending 6/30.
Domestic	"	" " 3/31.
N. & W. R. R.	"	in September.
"	"	" October.
Domestic	"	quarter ending 6/30.
N. & W. R. R. office	"	" " 9/30.
"	"	in November.
N. & W. R. R.	"	in December.
Domestic	"	quarter ending 6/30.
Domestic	"	to 12/31 uncollected.

Deduct for correction N. & W. bill for November.

Total.

2/ 9.	$54.28	Payroll.
	28.80	G. H. Hill—8 days.
	20.00	Reading meters.
3/17.	57.20	Payroll.
	48.75	G. H. Hill—13 days.
	20.00	Reading Meters.
	2.33	Supplies.
4/16.	20.00	Reading Meters.
	48.73	Payroll.
5/11.	30.03	"
5/12.	43.51	G. H. Hill—time and materials.
	20.00	Reading meters.
6/ 9.	1.04	Supplies.
	59.65	G. H. Hill—16 days and materials.
	20.00	Reading meters.
7/11.	39.60	G. H. Hill—12 days.
	1.85	Hardware and Water and gas review.
	20.00	Reading meters.
8/ 9.	44.19	Payroll.
	46.80	G. H. Hill—13 days.
	20.00	Reading meters.
9/14.	50.04	Payroll.
	43.33	G. H. Hill—13 days.
	20.00	Reading meters.
9/29.	.10	Supplies.
10/12.	42.22	Payroll.
	30.35	G. H. Hill—7 days and hardware.
	20.00	Reading meters.

1894—Plant Account.—*Continued.*

Date.	Amount.	Description.
11/15.	93.61	Payroll—Pumping and Supplies.
	69.92	G. H. Hill—6 days and supplies and wood.
	20.00	Reading meters.
12/11.	133.69	Payroll—Pumping and supplies.
	20.00	Reading meters.
	45.00	G. H. Hill—13 days.
	198.68	Wood, coal, oil, etc.
	19.84	Supplies.
5/28/95.	250.00	City Taxes.
2/25/95.	462.70	State and County Taxes.
	$2,166.24	
	975.00	Pro Rata General Expense for year.
	$3,141.24	Total.

873

1894—Maintenance.

4/16.	$38.33	G. H. Hill—11½" days—repairs.
6/11.	41.31	Payroll—maintenance.
7/11.	23.99	" repairs.
7/24.	.34	Supplies.
	$103.97	Total.

Résumé of Plant Account, Income, and Operation for 1894.

Cost of Plant and Property incurred prior to 1894.....		$67,602.50
" " " " " " during year.....		921.85
Total Cost of Plant and Property at end of year..		$68,524.35
Income from Service during year.....		$8,619.59
Expenditure for Operation during year....	$3,141.24	
" " Maintenance " "	103.97	
Total Expenditure for Operation and Maintenance during year.....		3,245.21
Net Return Applicable to Depreciation, Bond Interest and Dividends.....		$5,374.33

Résumé of Bond Interest and Dividends for 1894.

Pro Rata Interest Paid on Outstanding Securities.....	$1,310.00
" " Dividends for Year.....	525.00
" " Amount withdrawn for Bond Interest and Dividends in 1894.....	$1,835.00

874 1895.

In this year there was a small amount of 10", 8" and 4" cast iron pipe laid, and the number of services was increased. The total plumbing collections have again been deducted from plant account. A pumper's cottage was built at Beaver Pond, and over $650 was spent for legal services in connection with the Sanders suit. The superintendent's salary for the year has been charged partly to plant account and partly to operation, as the plant construction was not of a sufficient amount to require most or all of his time.

A little less than one-half of the revenue for the year came from the N. & W. R. R. and the balance from domestic consumption. The usual custom was followed by the N. & W. R. R. in charging a 5% commission on such collections as the paymaster deducted from their employees' paychecks. The total revenue earned for the year has been reduced approximately $350, which is the amount that the company regarded as not collectable.

A 1% dividend amounting to $2,520 was declared, and as has been the case with other general items applying to the business as a whole, it has been pro rated to arrive at the amount applicable only to the water works business.

Date.	Amount.	Acct.	Description.
1/ 4.	$80.00	B	Building pumper's Cottage at B. P.
1/22.	245.00	B	" " " " "
1/21.	18.53		Expense—Telegrams, livery & survey.
1/22.	45.78		G. H. Hill—7 days & building telephone line.
1/31.	8.15	L	Clark U. S. Court at Charleston—2 bills.
1/ 4.	34.85		G. H. Hill—Expense to Philadelphia. Revising Water system.
1/21.	3.85	S	Plumbing Pay roll.
1/22.	3.71	S	" Supplies.
2/19.	6.81	L	Messages regarding suit.
2/ 7.	93.71	S	Plumbing supplies.
2/19.	6.99	S	" payroll.
	21.17	S	G. H. Hill—5 days & plumbing supplies.
3/21.	12.00		G. H. Hill—3 days.
	8.41	S	Plumbing payroll.
4/ 5.	6.05	P	Freight on lead.
4/22.	22.10	P	" " 1 carload pipe.
4/29.	45.45	P	" " 2 carloads pipe.
4/17.	58.64		G. H. Hill—5 days—Telephone line.
4/19.	12.96	S	Plumbing payroll.
	14.50	L	Room, etc., water suit.
4/22.	7.20	R	Blueprints—Map of Saunder's Farm.
4/25.	20.15	E	Wm. Pierce Eng. Work.
5/ 9.	75.67	P	Tapping Machine.
	98.28	P	3024# lead.
	398.42	P	1 carload 8" pipe.
5/25.	819.77	P	2 carloads 8" pipe.
5/10.	23.24	P	Freight 2 carloads 8" pipe.

5/10.	23.24	P	Freight 2 carloads 8" pipe.
5/11.	33.61		Payroll.
5/16.	110.43	S	Unions, and cocks, valves, etc.
	42.36		G. H. Hill and April bills.
5/23.	27.50	S	100 corporation cocks.
5/30.	4.80	L	Carbon of Master Report B. P. Extension.
6/11.	274.33		G. H. Hill—time & expense authorized extension.
6/13.	110.49	S	24—½" Ludlow yard hydrants.
6/ 7.	257.36	P	1 carload 10" pipe.
	115.03	P	5228# specials.
	12.00	P	Freight 600 ft. 4" pipe.
6/19.	2.91	S	Payroll plumbing.
7/ 2.	117.91	P	600 ft. 4" pipe.
7/13.	483.83	P	G. H. Hill and payroll.
7/26.	17.75	P	10 pigs lead.
	7.58	P	Specials.
	85.30	S	2,132½'—½" galvanized pipe.
8/19.	5.58	S	Plumbing payroll.
	35.92		Payroll.
876			
8/20.	$18.08	S	G. H. Hill and plumbing.
9/19.	26.75	S	Plumbing payroll.
	33.17		Payroll.
9/20.	13.38		G. H. Hill and bills.
10/16.	10.19	S	Payroll plumbing.
	17.82	P	Payroll extension.
	14.40	S	G. H. Hill—4 days and plumbing.
11/13.	650.00	L	A. W. Reynolds—Legal Services.
11/15.	17.40		G. H. Hill 5 days and other disbursements.

1895—Plant Account.—*Continued.*

Date.	Amount.	Acct.	Description.
	15.44	S	Plumbing payroll.
	12.69	P	Extension "
	49.50	L	Printing 100 copies of Reynold's brief.
12/10.	40.73	S	Payroll plumbing extension.
	13.85		G. H. Hill 4 days.
	97.39		Plumbing material.
	$4,361.60	Total.	

1895—Income.

Date.	Amount.	Description.
1/31.	$427.77	N. & W. R. R. Consumption in January.
2/28.	321.74	" " " February.
3/31.	312.88	" " " March.
4/30.	314.90	" " " April.
5/31.	210.06	" " " May.
6/ 1.	4.13	" Office " quarter ending 3/31.
6/29.	226.95	" " in June.
6/18.	7.74	Bluefield Inn consumption quarter ending 3/31.
7/31.	287.91	N. & W. R. R. consumption in July.
8/20.	4.13	" in office " quarter ending 6/30.
8/31.	311.05	" " in August.
8/29.	9.70	Bluefield Inn consumption quarter ending 6/30.
9/19.	100.00	Domestic consumption quarter ending 3/31.
9/30.	265.66	N. & W. R. R. " in September.
10/31.	260.95	" " " October.

10/16.	100.00	Domestic consumption Quarter ending 3/31.
11/29.	4.13	N. &.W.R.R. " " " 9/30.
11/30.	253.71	" " in November.
11/13.	100.00	Domestic " Quarter ending 3/31.
	100.00	" " " " 6/30.
11/29.	14.18	Bluefield Inn " " " " 9/30.
12/10.	200.00	Domestic " " " " 3/31.
877		
	$200.00	Domestic consumption Quarter ending 6/30.
12/31.	279.38	N. & W. R.R. " " in December.
	3,200.00	Domestic " " to 12/31 uncollected.
	7,516.97	
	347.78	Deduct for rents not collectable.
	$7,169.19—Total.	

1895—Operation.

1/21.	20.00	Reading meters.
	95.50	Payroll—Running Pump.
	83.02	G. H. Hill 14 days—Wood—Hardware.
2/18.	20.00	Reading meters.
	87.04	Payroll—Pumping Station.
	107.09	G. H. Hill 21 days, labor, material & haul.
3/ 5.	.50	Telegram.
	270.52	Pumping station payroll.
	20.00	Reading meters.
	32.94	1 carload coal.

1895—Plant Account.—*Continued.*

Date.	Amount.	Description.
	13.56	Supplies.
	290.04	Pumping station payroll.
4/17.	20.00	Reading meters.
	16.00	Printing Water Register.
5/ 3.	53.64	Payroll Pumping Station.
5/ 1.	27.69	G. H. Hill—8 days.
5/16.	64.31	Bills.
5/20.	20.00	Meter Reading.
5/16.	78.47	G. H. Hill.
6/11.	95.10	Payroll Pumping Station.
6/19.	20.00	Reading Meters.
6/11.	92.42	Payroll Pumping Station.
7/13.	60.97	G. H. Hill.
	20.00	Reading Meters.
	5.95	Supplies.
7/26.	69.59	Payroll Pumping Station.
8/19.	68.52	G. H. Hill.
8/20.	20.00	Reading Meters.
	18.46	Freight on carload coal.
9/ 3.	16.73	1 carload coal.
9/11.	90.05	Payroll pumping station.
9/19.	145.70	G. H. Hill & fuel.
9/20.	20.00	Meter Reading.
	18.79	Freight on carload coal.
9/21.	18.43	" " " "
10/11.	116.31	Payroll Pumping Station.
10/16.		

	155.81	G. H. Hill—18 days & bills
	20.00	Meter Reading.
878		
10/25.	21.45	1 bbl. cylinder oil.
	24.44	Supplies.
	16.44	1 carload coal.
10/31.	11.35	Freight on carload coal.
11/13.	18.75	" " " "
11/15.	101.75	G. H. Hill—17 days & bills.
	132.06	Payroll Pumping Station.
	20.00	Reading Meters.
11/29.	26.07	2 carloads coal.
11/30.	15.12	Freight 1 carload.
12/10.	113.84	Payroll Pumping Station.
	148.02	G. H. Hill—10 days & bills.
	20.00	Reading meters.
12/24.	18.82	Freight on carload coal.
5/18/96.	416.63	State and county taxes.
	$3,497.89—Total	Pro Rata General Expense for Year.
		1895—Maintenance.
3/21.	$26.56	New Grate Bars.
10/25.	9.75	Repairing meter.
11/15.	60.00	Painting Tank.
11/29.	4.86	Rings for pump.
	$101.17—Total.	

879 Résumé of Plant Account, Income, and Operation for 1895.

Cost of Plant and Property incurred prior to 1895.....		$68,524.35
" " " " " " during year.....		4,361.60
Total Cost of Plant and Property at end of Year.		$72,885.95
Income from service during year.....		7,169.19
Expenditure for Operation during year....	$4,852.89	
" " maintenance " year....	101.17	
Total Expenditure for Operation and Maintenance during Year.....		4,954.06
Net Return Applicable to Depreciation, Bond Interest and Dividends		$2,215.13

Résumé of Bond Interest and Dividends for 1895.

Pro Rata Interest Paid on Outstanding Securities.....	$1,195.00
" " Dividends for Year	0.00
" " Amount Withdrawn for Bond Interest and Dividends in 1895.....	$1,195.00

880 1896.

Practically all the new work for the year consisted of service installations and plumbing, of which the collections for the latter have been deducted from the plant account. A very small portion of the superintendent's salary was charged to plant, as the new construction was so small that practically all his time should necessarily be charged to operating expense.

About 60% of the revenue was due to the consumption of the N. & W. R. R., and 40% from domestic consumption. The commission charged by the N. & W. R. R. Co. on collections from their employees, has been charged to operation, and $240, which the Company regarded as uncollectable water rents has been deducted from the revenue earned in the income account.

No dividend was declared in 1896. The other general items in connection with the business as a whole have been pro rated to find the amounts applicable to the water works division of the business.

Date.	Amount.	Acct.	Description.
1/20.	$13.85	S	36 bibb cocks.
	30.75		Telegrams, plumbing and new work.
	18.27		G. H. Hill 5 days and freight and haul.
	33.25		Ladle, pot and roadway stops.
	40.80	E	Preparing Beaver Pond Map.
2/11.	10.19	S	Payroll Plumbing.
	59.25		Payroll—New work.
	29.74		G. H. Hill—7 days and explosives.
3/16.	35.40	S	Plumbing Supplies.
3/17.	25.00	S	100 corporation cocks.
3/19.	36.62		Hauling, freight and payroll.
	44.20		G. H. Hill—4 days and payroll.
4/10.	9.80		Payroll.
5/11.	37.49	S	G. H. Hill, plumbing and new work.
6/20.	33.62	S	" " " " "
	1.50	L	Summons in suit.
7/25.	48.02		G. H. Hill, plumbing, and new work.
8/5.	64.04	S	2,001 1/3'—½" galv. pipe for plumbing.
8/7.	26.86		G. H. Hill, 3 days and payroll, new work.
	6.88	S	Payroll, plumbing.
9/17.	14.41	S	" "
	4.83	S	" new work.
	13.27		G. H. Hill—3 days.
10/12.	13.27		" " " " new work.
10/26.	18.57		Payrolls, bills, on plumbing & new work.
11/9.	21.30		G. H. Hill—5 days.
11/13.	42.67		Payroll & bills, plumbing & new work.

1896—Plant Account.—*Continued.*

Date.	Amount.	Acct.	Description.
12/21.	9.12	H	Freight on fire hydrants.
11/23.	23.70		G. H. Hill, expenses to Charleston—suit.
	15.38		Payroll new work.
	6.26	S	" plumbing.
	23.00		G. H. Hill, 5 days—new work.
	$811.31		
	624.04		Deduct for Plumbing Collections.
	$187.27		

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1896—Income.

Date.	Amount.	Description.
1/31.	$345.25	N. & W. R. R. consumption in January.
12/19.	4.13	" office " Quarter ending 12/31/95.
2/29.	418.27	" " " in February.
3/31.	11.63	Domestic " collected in March.
	347.20	N. & W. R. R. " in March.
4/30.	374.32	" " " April.
	810.99	Domestic " collected in March.
5/15.	4.13	N. & W. R. R. " " " 3/31.
5/30.	297.88	" " " May.
5/25.	18.82	Bluefield Inn " Quarter ending 3/31.
5/30.	217.95	Domestic " collected in May.
6/30.	75.22	" " " June.
	270.18	N. & W. R. R. " " " " "
7/20.	4.12	" office " quarter ending 6/3.

7/31.	293.78	" " in July.
	634.35	Domestic " collected in July.
8/31.	260.50	N. & W. R. R. " in August.
8/29.	16.98	Bluefield Inn " Quarter ending 6/30.
8/31.	433.02	Domestic consumption Collected in August.
9/30.	204.01	" " " " September.
	279.83	N. & W. R. R. " " " "
10/30.	6.28	" office " Quarter ending 9/30.
10/31.	312.39	" " in October.
	720.42	Domestic consumption collected in October.
11/28.	16.56	Bluefield Inn " Quarter ending 9/30.
11/30.	415.18	Domestic " collected in November.
	312.37	N. & W. R. R. " in November.
12/31.	343.22	" " " December.
	255.78	Domestic " collected in December.
	2,401.05	" " to 12/31 uncollected.
	$10,105.81	
	240.19	Deduct for rents not collectable.
	$9,865.62—Total.	

1896—Operation.

1/2.	15.35	Freight carload coal.
1/15.	15.00	" " "
1/20.	59.60	4 carloads coal.
	114.98	Payroll, Pumping Station..
	93.79	G. H. Hill—17 days & hauling & material.
	20.00	Reading meters.
1/31.	15.57	Freight carload coal.

1896—Plant Account.—*Continued.*

Date.	Amount.	Description.
2/11.	140.17	Payroll, Pumping Station.
	155.13	G. H. Hill 18 days & payroll.
	20.00	Reading meters.
1/31.	15.57	Freight carload coal.
883		
2/11.	140.17	Payroll Pumping Station.
	155.13	G. H. Hill 18 days & payroll.
	20.00	Reading meters.
2/15.	18.57	Freight carload coal.
2/28.	15.46	" " "
3/10.	15.00	" " "
3/21.	18.57	" " "
3/17.	56.53	4 carloads coal.
	1.85	Expenses.
3/19.	207.31	G. H. Hill 19 days, payroll & bills.
	20.00	Reading meters.
3/31.	24.45	M. W. Bryan traveling & other expense.
4/1.	17.36	Freight carload coal.
4/29.	18.64	" " "
4/10.	274.50	G. H. Hill 21 days & Pumping Station payroll.
	20.00	Reading meters.
4/29.	45.88	3 carloads coal.
	30.25	Printing forms, register, etc.
	35.50	Supplies.
	18.05	M. W. Bryan traveling expenses.
5/11.	233.27	G. H. Hill and payroll.

5/11.	233.27	G. H. Hill and payroll.
5/12.	16.05	Freight one carload coal.
5/25.	17.71	" " " "
5/28.	20.00	Reading meters.
6/11.	19.20	Freight 1 carload coal.
6/16.	19.20	" " " "
6/26.	21.58	" " " "
6/20.	222.24	G. H. Hill and payroll.
7/10.	22.28	Freight 1 carload coal.
7/13.	115.78	7 carloads coal.
7/25.	295.44	G. H. Hill, payroll and bills.
8/5.	17.63	Freight 1 carload coal.
8/15.	37.94	" 2 carloads coal.
8/7.	239.04	G. H. Hill and payroll Pumping Station.
8/29.	15.31	Supplies.
9/10.	37.27	Freight 2 carloads coal.
9/16.	18.92	" 1 carload coal.
9/17.	269.94	G. H. Hill, payroll and bills.
	2.00	Printing circulars.
	22.36	2 carloads coal.
10/5.	64.33	4 carloads coal.
	41.25	Freight, 2 carloads coal.
	26.40	Supplies.
10/12.	19.64	Freight, 1 carload coal.
10/12-26.	318.42	G. H. Hill, payrolls and bills.
10/20.	18.97	Freight 1 carload coal.
10/24.	18.75	" " " "
884		
10/31.	$22.32	Freight one carload coal.
	51.15	3 carloads coal.

1896—Plant Account.—*Continued.*

1896—Operation—*Continued.*

Date.	Amount.	Description.
11/10.	19.20	Freight 1 carload coal.
11/17.	19.02	" " " "
11/30.	19.42	" " " "
11/9.	88.90	G. H. Hill—15 days and salary.
11/13.	174.60	Payroll Pumping Station.
12/7.	18.62	Freight 1 carload coal.
12/21.	14.51	" " " "
12/30.	23.16	" " " "
12/7.	69.00	G. H. Hill—15 days.
	204.88	Payroll and bills, Pumping Station.
	$4,383.27	
	1,200.00	Pro Rata General Expense for Year.
	$5,583.27—Total.	

1898—Maintenance.

1/20.	13.50	Valves for Beaver Pond pump.
2/7.	11.51	Supplies.
9/4.	25.00	Carpentry.
9/17.	30.66	Supplies for hydrant repairs.
12/7.	25.00	Carpentry.
	$106.67—Total.	

Résumé of Plant Account, Income, and Operation for 1896.

Cost of Plant and Property incurred prior to 1896....		$72,885.95
" " " " " " during year.....		187.27
Total cost of plant and property at end of year.....		$73,073.22
Income from Service During Year.....		$9,865.62
Expenditure for operation during year....	$5,583.27	
" " maintenance during year	105.67	
Total Expenditure for Operation and Maintenance during Year.....		5,688.94
Net Return Applicable to Depreciation, Bond Interest and Dividends.....		$4,176.68

885 Résumé of Bond Interest and Dividends for 1896.

Pro Rata Interest paid on outstanding securities....	$1,210.00
" " Dividends for year.....	0.00
Pro Rata Amount Withdrawn for Bond Interest and Dividends in 1896.....	$1,210.00

886 1897.

A small amount of cast iron pipe was laid in 1897, and a corresponding amount of service installation and plumping work was done, of which the amount collected for the latter has been deducted from the plant account. During the year five fire hydrants were installed for which the city paid the Company $225, which amount was also deducted from the Company's expenditure for plant account. This is the first record on the Company's books that makes any mention of the installation of fire hydrants. As in 1896, only a small portion of the superintendent's salary has been charged against the plant account.

A little more than one-third of the revenue for the year came from the N. & W. R. R. and almost two-thirds from domestic consumption. The commission charged by the N. & W. R. R. on collections has been regarded as an operating charge, and $325, which the company regarded as uncollectable domestic revenue, has been deducted from the income account.

No dividend was declared. The other general items were pro rated in the usual way.

$105.67—Total.

Date.	Amount.	Acct.	Description.
1/ 6.	$25.53		G. H. Hill 6 days.
1/28.	45.14	S	Labor and bills, plumbing.
1/30.	25.21	S	Supplies for plumbing.
2/ 2.	131.15	P	6 fire hydrants.
2/ 4.	8.85		G. H. Hill—2 days.
	7.91		Payrolls, plumbing and new work.
3/ 6.	9.59		G. H. Hill—2 days.
3/30.	22.72		Payroll and bills, plumbing and new work.
4/ 5.	21.30		G. H. Hill—5 days.
4/13.	10.84		Payroll, plumbing and new work.
5/11.	17.69		G. H. Hill—4 days.
	31.54		Payrolls & bills, plumbing and new work.
6/ 8.	3.00		Payroll, plumbing and new work.
6/26.	1.60		" " " " "
7/ 9.	8.30	L	Costs in water suit.
7/16.	2.20	L	Witnesses in " "
7/19.	2.50	L	" " "
7/16.	96.16	P	Freight on Pipe, lead & oakum.
7/30.	.45	P	" " valve.
7/19.	5.80		Payroll, labor and new work.
7/19.	1.40	R	Reservoir option.
8/ 2.	57.90	P	1544# lead.
	7.25	P	1—4" valve.
8/ 9.	50.00		G. H. Hill salary.
8/17.	24.57	P	Payroll, extensions.
	1.20	S	" " plumbing.
	200.00	P	4" pipe.

	200.00	P	4" pipe.		
9/13.	153.25	P	Pipe and sakum.		
	40.09	P	G. H. Hill salary.		
	179.37	P	Payroll, extensions.		
	10.35		" new work.		
	2.36	S	" plumbing.		
9/28.	.90	S	Bills "		
	27.59	P	Bills, extensions.		
10/10.	8.33		Freight on galvanized pipe.		
10/26.	4.05		" " " "		
10/20.	40.00		G. H. Hill salary.		
10/26.	6.84	S	Payroll plumbing.		
	16.90	P	Bills, extensions.		
11/ 3.	117.93	P	Pipe.		
	25.00		G. H. Hill salary.		
11/ 5.	32.65	S	72 corporation cocks.		
	133.35		1,512—½" & 450'—¾" galv. pipe.		
11/ 6.	107.65		Payroll.		
	10.50	L	Livery & expense in water suit.		
12/21.	12.22		Payroll new work.		
	3.26	S	" plumbing.		
12/24.	4.00	S	Incidentals, new work & plumbing.		
12/31.	3.70	S	Plumbing supplies.		
	$1,760.00		Deduct Collection from city—5 hydrants.....	$225.00	
			" for plumbing collections.....	209.35	
	434.35				434.35
	$1,325.65—Total.				

1897—Plant Account.—*Continued.*

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1897—Income.

Date.	Amount.	Description.
1/30.	$5.87	Domestic Rents collected in January.
	352.42	N. & W. R. R. consumption in January.
2/28.	275.59	" " " February.
	2.25	Domestic rents collected in "
3/31.	50.73	" " " " March.
	305.28	N. & W. R. R. consumption in March.
4/28.	10.12	" office consumption quarter ending 3/31.
4/30.	267.44	" consumption in April.
	458.31	Domestic rents collected in April.
5/27.	14.27	Bluefield Inn consumption quarter ending 3/31.
5/31.	692.75	Domestic rents collected in May.
	244.75	N. & W. R. R. consumption in May.
6/30.	186.62	" " " June.
	71.43	Domestic rents collected in June.
7/31.	665.42	" " " " July.
	206.99	N. & W. R. R. consumption in July.
8/ 6.	10.13	" office consumption Quarter ending 6/30.
8/31.	236.46	" consumption in August.
	420.80	Domestic rents collected in August.
	13.50	Bluefield Inn consumption Quarter ending 6/30.
	1.70	" " " 7/1-7/10 inclusive.
9/30.	255.27	Domestic rents collected in September.
	284.46	N. & W. R. R. consumption in September.
10/27.	10.12	" office consumption Quarter ending 9/30.
10/30.	285.28	" consumption in October.

	479.66	Domestic rents collected in October.
11/30.	655.48	" " " " November.
	324.75	N. & W. R. R. consumption in November.
12/31.	326.69	" " " December.
	264.89	Domestic rents collected in November.
	2,320.45	" " to 12/31 uncollected.
	$9,699.88	
	324.51	Deduct for rents not collectable.
	$9,375.37—Total.	

1897—Operation.

1/16.	38.60	Freight 2 carloads coal.
1/27.	22.54	" 1 carload coal.
1/ 6.	68.17	G. H. Hill—16 days.
	25.00	Carpenter—salary.
1/ 2.	164.56	10 carloads coal.
1/28.	144.86	G. H. Hill, payrolls & bills.
1/30.	29.66	Supply bills.
2/ 1.	19.64	Freight 1 carload coal.
2/ 5.	68.68	Norton Coal Co. 1 carload coal.
889		
2/ 6.	$22.23	Freight 1 carload coal.
2/19.	22.68	" " " "
2/ 4.	70.77	G. H. Hill—16 days.
	25.00	R. R. Carpenter salary.
2/26.	215.91	Payrolls and bills.

1897—Plant Account.—*Continued.*

1897—Operation.—*Continued.*

Date.	Amount.	Description.
3/ 6.	67.08	G. H. Hill—14 days.
	25.00	R. R. Carpenter—salary.
3/10.	38.18	2 carloads coal.
3/16.	1.18	Supplies.
3/20.	20.31	Freight 1 carload coal.
3/20.	141.72	Payrolls and bills.
4/ 5.	59.63	G. H. Hill—14 days.
	25.00	R. R. Carpenter Salary.
4/13.	133.99	Payroll and bills.
	4.25	Water rent register.
4/30.	17.27	1 carload coal.
5/11.	66.35	G. H. Hill 15 days.
	25.00	R. R. Carpenter—Salary.
	94.02	Payrolls & bills.
5/18.	19.51	Freight 1 carload coal.
6/ 8.	47.08	Payroll Pumping Station.
6/11.	53.85	G. H. Hill—14 days.
	20.00	R. R. Carpenter salary.
	1.15	Supplies.
	16.58	1 carload coal.
6/14.	4.00	R. R. Carpenter—salary.
6/26.	19.51	Hauling carload coal.
7/ 9.	78.67	G. H. Hill & W. J. Updike, salaries.
7/16.	22.41	Freight 1 carload coal.
7/30.	14.81	" " " "

7/19.	15.34	1 bbl. cylinder oil.
	31.67	Payroll and bills.
8/ 9.	25.00	G. H. Hill salary.
	9.00	W. J. Updike—salary.
8/17.	40.74	Payroll.
	35.44	Hauling 2 carload- coals.
	30.13	2 carloads coal.
9/13.	4.77	Supply bills.
	25.00	G. H. Hill salary.
	40.00	Payroll.
9/28.	55.40	Hauling 2 carloads coal.
	.70	Supplies.
10/20.	40.00	G. H. Hill salary.
10/26.	55.00	Payroll.
	75.23	Hauling 3 carloads coal.
	11.07	Bills and payroll.
890		
11/ 3.	$32.00	Payroll.
	50.00	G. H. Hill salary.
11/ 5.	18.54	1 bbl. cylinder oil.
11/16.	41.54	Payroll.
	81.96	Hauling coal.
	11.51	Supplies.
12/ 8.	66.67	G. H. Hill salary.
12/21.	77.30	Payroll.
12/24.	5.96	Coal.
	1.00	Hauling oil.

1897—Plant Account.—*Continued.*

1897—Operation.—*Continued.*

Date.	Amount.	Description.
11/18.	89.81	Coal.
12/14.	53.28	"
12/15.	75.78	"
12/ 1.	50.24	Coal and sundries.
	$3,104.93	
		Pro rata General Expense for Year.
		Total.

1897—Maintenance.

2/ 6.	1.54	Pump repair parts.
3/10.	29.44	Worthington pump repairs.
3/31.	16.09	Supplies.
	$47.07	

891 Résumé of Plant Account, Income, and Operation for 1897.

Cost of Plant and Property incurred prior to 1897.....	$73,073.22
" " " " " " during year	1,325.65
Total Cost of Plant and Property incurred at end of Year	$74,398.87
Income from Service During Year.....	9,375.37
Expenditure for operation during year.... $4,564.93	
" " maintenance " " 47.07	
Total Expenditure for Operation and Maintenance During Year	4,612.00
Net Return Applicable to Depreciation, Bond Interest and Dividends	$4,763.37

Résumé of Bond Interest and Dividends for 1897.

Pro Rata Interest Paid on Outstanding Securities.....	$1,625.00
" " Dividends for year	0.00
" " Amount withdrawn for Bond Interest and Dividends in 1897.....	$1,625.00

892 1898.

A small amount of service and plumbing work was done in 1898, of which the collections for the latter have been deducted from the charges to plant account. Over $1,000 was expended for legal services in the W. W. Sanders' appeal suit. The superintendent's salary has been charged entirely to operating expense.

A little less than 40% of the annual revenue was derived from the N. & W. R. R. consumption, and a little more than 60% from domestic consumption. The commission charged by the N. & W. R. R. and the revenue considered by the company as uncollectable have been regarded in the usual manner.

No dividend was declared. General expense and bond interest have been pro rated on the usual basis.

Date.	Amount.	Acct.	Description.
1/10.	$28.25	M	100 corporation cocks.
1/29.	12.55	M	Payroll plumbing.
	4.79		" new work.
2/1.	2.79	M	Plumbing supplies.
2/7.	25.95	M	2 Meters.
2/19.	8.31		Payroll plumbing & new work.
3/26.	4.96		Payroll and bills new work.
	10.02	M	" " " plumbing.
4/12.	249.67	L	Fees and costs in water suit.
4/25.	4.69		Payroll plumbing and new work.
5/17.	2.78		" " " " "
5/7.	50.31	M	Plumbing supplies.
6/27.	4.87	M	" "
6/28.	129.90	P	Pipe.
7/13.	4.79	M	Payroll, plumbing and new work.
	25.90	M	1,003′—½″ galvanized pipe.
	7.50	M	Tube expander.
8/10.	4.94		Payroll plumbing and new work.
	1.20	L	Witness fee in water suit.
9/13.	8.80		Payroll and bills, new work.
	3.84	M	" " " plumbing.
9/14.	25.32	M	Plumbing supplies.
9/13.	500.00	L	A. J. & S. D. May—Legal Services in Water Suit.
9/29.	250.00	L	" " " " " " " " "
10/24.	250.00	L	" " " " " " " " "
	6.47		Payroll, plumbing and new work.
11/15.	8.13		" " " " "

	2.40		Supplies.
12/3.	7.13		Tools and fittings.
	20.40	P	510# lead.
	46.98	S	½" stops.
12/12.	8.74		Payroll, plumbing & new work.
	2.14		Supplies.
12/17.	101.05	L	Simms & Enslaw in water suit.
	$1,822.96		
	230.14		Deduct for plumbing collections.
	$1,592.82		Total.

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1898—Income.

Date.	Amount.	Description.
1/31.	$354.33	N. & W. R. R. consumption in January.
	7.87	Domestic water rents collected in January.
2/28.	1.95	" " " " " February.
	338.34	N. & W. R. R. Consumption in February.
3/31.	387.23	" " March.
	72.81	Domestic water rents collected in March.
4/28.	10.12	N. & W. R. R. office consumption 1st quarter.
4/30.	335.75	" consumption in April.
	821.84	Domestic Water rents collected in April.
5/31.	478.44	" " " " " May.
	304.88	N. & W. R. R. consumption in May.
6/30.	248.60	" " June.
	292.89	Domestic Water rents collected in June.
7/13.	10.13	N. & W. R. R. office consumption, 2nd quarter.

1898—Plant Account.—*Continued.*

1898—Income.—*Continued.*

Date.	Amount.	Description.
7/30.	846.44	Domestic water rents collected in July.
	262.59	N. & W. R. R. consumption in July.
8/31.	258.57	" " " August.

1898—Operation.

1/1.	85.98	Hauling coal.
1/11.	66.67	G. H. Hill—salary.
1/29.	55.00	Payroll—pumping.
	91.07	Coal and hauling.
	44.44	Labor and supplies.
	5.27	Commission on water collection.
2/9.	51.73	3 carloads coal and freight.
2/18.	55.98	Coal.
2/5.	66.67	G. H. Hill, salary.
2/7.	18.50	1 bbl. cylinder oil.
2/10.	43.33	Payroll pumping.
	130.55	" labor & hauling coal.
	7.70	Supply bills.
3/28.	49.65	Coal.
3/8.	66.67	G. H. Hill salary.
	59.68	Payroll—labor pumping.
	72.39	Hauling coal.
	36.08	Supplies and labor.
4/28.	53.13	Coal.

4/26.	9.90	Supplies.
4/6.	66.67	G. H. Hill salary.
4/14.	22.75	Water Register & bills.
4/25.	47.72	Pumping payroll and labor.
	77.53	Hauling coal.
	4.50	Livery visiting springs.
	7.06	Commission on collection.
895		
5/24.	$18.45	1 carload coal.
5/5.	66.67	G. H. Hill salary.
5/17.	38.94	Payroll pumping and labor.
	27.00	Hauling 1 carload coal.
	3.50	Supply bills.
6/20.	18.04	1 carload coal.
6/6.	66.67	G. H. Hill.
6/27.	44.22	Payroll—pumping & labor.
	26.34	Hauling 1 carload coal.
7/13.	37.85	2 carloads coal and freight.
7/13.	66.67	G. H. Hill, salary.
	50.19	Pumping & labor payroll.
	55.23	Hauling 2 carloads coal.
7/14.	11.07	Supplies.
7/28.	6.76	Commission on Collection.
8/15.	19.29	1 carload coal and freight.
8/10.	66.67	G. H. Hill salary.
	58.71	Payroll, pumping & labor.
8/10.	32.17	Hauling coal.
	3.83	4½ tons slack.
	14.70	1 bbl. cylinder oil.

1898—Plant Account.—*Continued.*

1898—Operation.—*Continued.*

Date.	Amount.	Description.
	5.40	Sundries.
	33.18	2 carloads coal and freight.
9/20.	66.67	G. H. Hill salary.
9/13.	47.73	Payroll, pumping & labor.
	48.44	Hauling 2 carloads coal.
	6.94	Sundires.
	44.66	Supplies and labor.
9/30.	.50	Notarial services.
	48.47	3 carloads coal and freight.
10/17.	62.03	Payroll, pumping & labor.
10/24.	70.72	Hauling 3 carloads coal.
	66.67	G. H. Hill—salary.
	19.53	Supplies.
	6.52	Commission on Collection.
	52.82	3 carloads coal and freight.
11/14.	58.35	Payroll, pumping and labor.
11/15.	79.82	Hauling 3 carloads coal.
	6.02	3 tons slack.
	8.43	Supplies.
	3.60	Drawing paper.
	16.29	1 bbl. cylinder oil.
	66.67	G. H. Hill salary.
12/10.	57.09	3 carloads coal and freight.

12/2.	66.67	G. H. Hill—salary.
12/3.	3.31	Supplies.
12/12.	59.47	Payroll, pumping and labor.
	83.34	Hauling 3 carloads coal.
	4.32	Supplies.
	$3,123.25	
		Pro rata General Expenses for Year.
		Total.

1898—Maintenance.

1/10.	3.39	Tapping machine repairs.
1/2.	79.00	50 boiler flues.
2/1.	17.44	3 grate bars, sleeves & plugs.
4/12.	12.75	Packing and gaskets.
11/15.	43.30	Pump repair supplies.
	$155.88	Total.

897 Résumé of Plant Account, Income, and Operation for 1898.

Cost of Plant and Property incurred prior to 1898		$74,398.87
" " " " " " during year		1,592.87
Total Cost of Plant and Property at end of Year		$75,991.69
Income from Service During Year		$10,627.32
Expenditure for Operation during year	$4,308.25	
" " maintenance " "	155.88	
Total Expenditure for Operation and Maintenance during Year		4,464.13
Net Return Applicable to Depreciation, Bond Interest and Dividends		$6,163.19

Résumé of Bond Interest and Dividends for 1898.

Pro Rata Interest paid on Outstanding Securities	$1,630.00
" " Dividends for Year	0.00
" " Amount Withdrawn for Bond Interest on Dividends in 1898	$1,630.00

898 1899.

A small amount of cast iron and galvanized mains were laid in 1899, and the usual amount of services and plumbing work was installed. The amount collected for the latter has been deducted from the plant account charges. About $1,150 was expeended for legal services in the W. W. Sanders' appeal suit, and has been charged to plant account. A boiler was transferred from the Graham Lumber Co. at Graham, W. Va., to the Beaver Pond Pumping station. The charges for moving and erecting the boiler were recorded on the Company's books as an operating expense, but in this past cost investigation they are considered as a plant betterment and are, therefore, charged to plant account. There is no record of any cost in connection with the boiler itself, and since Mr. Dingee, president of the company at that time, owned the Graham Lumber Co., it is believed that his instructions were to move the boiler to Beaver Pond, and that the record of payment for same was probably overlooked. An estimated allowance in the amount of $800 has been included in the plant charges for the year.

Approximately two-thirds of the revenue for the year came from domestic consumption, and one-third from the N. & W. R. R. The commissions charged the company by the N. & W. R. R. in
899 collections from its employees has been regarded as an operating charge, and $175, which represented the amount of domestic revenue which the company considered uncollectable, has been deducted from the income account for the year.

No dividend was declared. The other general items have been pro rated in the usual way.

Date.	Amount.	Acct.	Description.
1/20.	$325.00	L	A. W. Reynolds, services in water suit.
1/31.	9.04		Bills & labor, plumbing & new work.
2/13.	9.74		Payroll, plumbing & new work.
	300.00	L	A. W. Reynolds, services in water suit.
3/15.	11.06		Payrolls & bills, plumbing.
4/10.	13.53		Payrolls, plumbing & new work.
	1.04	S	M. G. Whitlow, lead work plumbing.
5/15.	8.65	S	Neptune W. M. Co.—⅝" meter.
	.92	S	Freight on meter.
	4.21		Payroll, plumbing & new work.
5/17.	21.60	S	Smith C. Co.—48 corporation cocks.
6/26.	21.74		Labor & bills, plumbing & new work.
7/17.	815.00	L	Simms & Enslow—legal services in suit.
7/15.	1.24	S	Payroll—plumbing.
	23.24	S	Material— "
8/17.	3.13	S	N. & W. freight on hydrants.
	10.79		Payroll, plumbing & new work.
	3.30	S	M. G. Whitlow, plumbing.
9/14.	65.77	P	Eddy Valve Co.—3 fire hydrants.
	21.11		Payroll—plumbing & new work.
10/20.	4.28		" " " " "
10/28.	12.00	L	Allen, Lane & Scott Ptg. brief in water suit.
11/16.	164.71	S	W. A. Cather 2041'—½" galv. pipe plumbing.
	10.80	S	" " malleable unions . "
	1.17	S	M. G. Whitlow—fittings "
	.50		Leather—new hydrant valve.
	19.42		Payroll, plumbing & new work.

1899—Plant Account—*Continued.*

Date.	Amount.	Acct.	Description.
12/ 5.	49.00	L	Allen, Lane & Scott—50 copies brief.
12/ 7.	123.38	P	Glamorgan Co. 3" & 4" pipe & ells.
	19.61	P	N. & W. Ry. freight on pipe.
12/16.	24.55		Payroll, plumbing & new work.
	4.40		Smith C. Co.—oakum & washers.
	.47		Bluefield Hardware Co.—solder.
	1.70		Hauling & express.
	800.00	M	Boiler from Graham Lumber Co.—installed at Beaver Pond—Est.
7/ 5.	6.59	M	Labor moving boiler.
8/ 2.	8.00	M	N. & W. R. R. freight on 1 carload brick.
	10.00	M	Town of Graham—Damage hauling boiler over bridge.
8/17.	111.89	M	Labor hauling, moving & erecting boiler.
	66.83	M	Hauling brick and other boiler material.
	68.50	M	G. N. Speiden Co. brick, fire brick & lime.
	4.50	M	Labor moving & erecting boiler.
	8.00	M	Extra labor erecting stack.
9/14.	89.39	M	Payroll—erecting boiler.
901			
	$12.50	M	Cuyler & Mohler —2½" safety valve.
	36.20	M	Bluefield Hardware Co.—supplies for boiler erection.
	107.09	M	W. A. Cather—supplies for boiler erection.
	8.27	M	Expense in boiler erection.
	17.97	M	Georgia Lumber Co.—fire brick & flue cleaner.
10/20.	18.94	M	Payroll—erecting boiler.
	3.75	M	J. R. Calfee—hauling stack scaffold poles.
	1.57	M	M. G. Whitlow—tinning at Beaver Pond a/c new boiler.

	1.57	M	M. G. Whitlow—tinning at Beaver Pond a/c new boiler.
	1.50	M	C. Bailey—Royalty on stone.
	12.00	M	T. M. Calfee—12 yds. sand.
	11.25	M	Tom Sante—75 meals.
10/20.	8.33	M	J. P. Cameron—removing boiler.
	12.60	M	Bluefield Hardware Co.—a/c new boiler.
	14.45	M	Disbursements a/c new boiler.
11/18.	11.25	M	Smith C. Co. injector new boiler.
	$3,557.47		
	142.46		Deduct for plumbing collections.
	$3,415.01—Total.		

1899—Income.

Date.	Amount.	Description.
1/31.	7.50	Domestic Revenue collected in January.
	461.22	N. & W. R. R. January consumption.
2/28.	372.09	" February "
	12.11	Domestic revenue collected in February.
3/31.	54.98	" " " " March.
	382.62	N. & W. R. R. March consumption.
4/30.	376.55	" April "
	689.48	Domestic revenue collected in April.
4/22.	10.12	N. & W. office consumption—1st quarter.
5/31.	661.98	Domestic revenue collected in May.
	353.59	N. & W. R. R. May consumption.
6/30.	313.44	" June "
	203.20	Domestic Revenue collected in June.
7/14.	10.13	N. & W. R. R. office consumption—2nd quarter.

1899—Plant Account—*Continued.*

1899—Income—*Continued.*

Date.	Amount.	Description.
7/31.	$279.11	N. & W. R. R. July consumption.
	603.99	Domestic Revenue collected in July.
		" " " " August.
8/31.	870.91	
	207.29	N. & W. R. R. August consumption.
		" " Sept. "
9/30.	178.19	
	184.18	Domestic revenue collected in Sept.
10/28.	10.12	N. & W. R. R. office consumption—3rd quarter.
10/31.	172.26	" October consumption.
	1,012.28	Domestic revenue collected in October.
		" " " " November.
11/30.	374.02	
12/30.	182.08	N. & W. R. R. December consumption.
11/30.	202.23	" November "
	248.43	Domestic revenue collected in December.
	2,034.02	" " to 12/31 uncollected.
	210.00	Hydrant rental for year.
	$10,678.12	
	174.89	Deduct for rents not collectable.
	$10,503.43	

1899—Operation.

1/16.	$55.92	3 carloads coal.
1/ 3.	66.67	G. H. Hill salary.
	6.85	N. & W. Supplies.

1/31.	6.59	Commission on water rents.
	67.70	Payroll, pumping & labor.
	81.69	C. C. Bailey—hauling 3 carloads coal.
	13.42	Supplies.
2/18.	52.49	3 carloads coal.
2/ 2.	66.67	G. H. Hill salary.
2/13.	69.68	Payroll, pumping & labor.
	76.69	C. C. Bailey—hauling 3 carloads coal.
	.10	Hauling pipe.
2/15.	23.75	Stone Ptg. Co.—Water reg. & receipts.
3/13.	52.41	3 carloads coal.
3/15.	66.67	G. H. Hill salary.
	76.39	Payroll, pumping & labor.
	81.01	C. C. Bailey & J. R. Calfee hauling coal.
	3.25	T. A. Becker & J. A. Lowder—slack.
903		
	$7.70	Supplies.
3/24.	4.25	Stone Ptg. Co.—water record.
4/22.	53.18	3 carloads coal.
4/10.	66.67	G. H. Hill salary.
	65.38	Payroll—pumping & labor.
	51.41	J. R. Calfee hauling 2 carloads coal.
	5.30	Coal house & buggy rent & sundries.
5/10.	45.97	3 carloads coal.
5/ 1.	6.91	Commission on water rents.
5/ 8.	10.04	N. & W. Supplies.
5/16.	5.88	" "
5/ 9	66.67	G. H. Hill—salary.
5/15.	62.71	Payroll, pumping & labor.
	67.14	J. R. Calfee—hauling 3 carloads coal.

1899—Plant Account—*Continued.*

1899—Operation—*Continued.*

Date.	Amount.	Description.
	3.00	R. G. Meadow Coal house rent.
	6.77	Sundries.
6/16.	72.23	4 carloads coal.
6/26.	66.67	G. H. Hill—salary.
	64.89	Payroll, pumping & labor.
	78.29	J. R. Calfee—hauling 3 carloads coal.
	69.73	Supply bills.
7/14.	37.89	2 carloads coal.
7/15.	78.54	Payroll, pumping & labor.
	83.45	J. R. Calfee—hauling 3 carloads coal.
	3.00	R. G. Meadow—rent coal house.
	19.76	Supplies.
	66.67	G. H. Hill salary.
	7.30	Commission on water rents.
8/17.	67.90	4 carloads coal.
8/ 9.	66.67	G. H. Hill—salary.
8/17.	65.88	Payroll—pumping labor.
	99.18	J. R. Calfee hauling 4 carloads coal.
	3.00	R. G. Meadow—coal house rent.
	8.79	Supplies.
9/18.	56.35	3 carloads coal.
9/ 5.	66.67	G. H. Hill—salary.
9/14.	74.94	Payroll—pumping & labor.
	82.22	J. R. Calfee—hauling 3 carloads coal.
	3.00	R. G. Meadows—Coal house rent.

10/28.	64.28	4 carloads coal.
10/ 6.	66.67	G. H. Hill salary.
10/20.	90.81	Payroll—pumping & labor.
	72.08	J. R. Calfee—hauling 3 carloads coal.
904 ·		
10/20.	$2.52	Hawley & Co.—10 gallons oil.
	6.70	W. A. Cather supplies.
	6.86	Commission on water rents.
11/16.	72.78	4 carloads coal.
11/18.	103.15	Payroll, pumping & labor.
	89.27	J. R. Calfee—hauling coal & wood.
	37.00	Bills, including rent on coal house.
	66.67	G. H. Hill—salary.
12/18.	35.74	2 carloads coal.
	66.67	G. H. Hill—salary.
	92.58	Payroll—pumping & labor.
	82.59	J. R. Calfee—hauling 2 carloads coal.
	14.25	Hauling cinders from station.
	3.00	R. G. Meadow—Coal house rent.
	2.90	Sundries.
	$3,617.01	
	945.00	Pro Rate General Expense for Year.
	$4,562.01	Total.

1899—Plant Account—*Continued.*

1899—Maintenance.

Date.	Amount.	Description.
5/17.	1.90	Smith C. Co.—repair parts.
5/22.	19.58	Worthington Repair parts for pump.
6/1.	5.66	N. & W. repairing pump.
9/15.	26.90	Labor lowering Bland St. main.
10/ 6.	26.19	W. G. McDowell—repair supplies.
10/20.	27.90	Payroll—scraping tank.
	56.80	W. T. Burroughs—painting tank.
11/18.	14.40	Payroll—pump repair.
12/16.	45.32	Grate Bars.
	$224.65	Total.

905 Résumé of Plant Account, Income, and Operation for 1899.

Cost of Plant and Property incurred prior to 1899....		$75,991.69
" " " " " " during year.....		3,415.01
Total Cost of Plant and Property incurred at end of Year		$79,406.70
Income from service during year		$10,503.43
Expenditure for operation during year....	$4,562.01	
" " maintenance " "	224.65	
Total Expenditure for Operation and Maintenance During year		4,786.66
Net Return Applicable to Depreciation, Bond Interest and Dividends.....		$5,716.77

Résumé of Bond Interest and Dividends for 1899.

Pro Rata interest paid on outstanding securities.....	$1,670.00
" " Dividends for Year	0.00
" " Amount Withdrawn for Bond Interest and Dividends in 1899.	$1,670.00

906 1900.

Very little work was done on the distribution system except for service and plumbing installations. The collection- for the latter have been deducted from the plant account. The land for Ada Station, the reservoir and dam, and for Ada Spring was purchased. Work was begun on the original Ada Pumping Station and the 8" pipe line leading to the city for which rights-of-way were purchased.

Approximately three-quarters of the revenue for the year came from domestic consumption, and one-quarter from the N. & W. R. R. The commission charged the Company by the N. & W. R. R. for collections, and the amount- of revenue considered as uncollectable by the Company have been treated in the same manner as for the preceding years.

On December 31 as 6% mortgage for $130,000 was issued. Of this amount $28,000 in mortgages was sold and $102,000 exchanged for bonds outstanding from the issue of 1890. Of the original bond issue $23,000 had been cancelled and the $102,000 was exchanged on July 31, 1901.

No dividend was declared. The items of General Expense and Bond Interest have been pro rated in the usual way to arrive at the amounts to be considered applicable to the water works branch of the business.

Date.	Amount.	Acct.	Description.
			Payroll plumbing and new work.
1/19.	$18.35		
	4.19		W. A. Cathar labor & material new work.
2/ 8.	2,600.00	R	Honaker Mill, Reservoir and Dam land.
2/20.	1.56		Option and expense on extension.
	1.35	S	M. G. Whitlow, S. & W. cock.
	.60	S	" lead trap.
	16.25	S	Payroll, plumbing.
3/12.	666.00	W	Water rights along creek.
3/20.	14.75	S	Payroll, plumbing.
	2.36	E	" surveys.
	3.53		Bluefield Hardware Co. Plumbing supplies 37 ft. galvanized pipe.
	1.50		N. & W. R. R. freight.
	27.85	E	Labor & Livery on surveys.
4/20.	15.59	S	Payroll, plumbing.
	.85		Bluefield Hardware Co. plumbing supplies.
	1.75	S	M. G. Whitlow ½ way cock, plumbing.
	28.80	S	H. Mueller—48 L. & T. cocks plumbing.
	28.77	S	Smith C. & Co. bibbs & supplies "
	2.23		Sundries.
	2.11	E	Surveys.
	3.40	E	W. B. Earle profile paper.
	17.39		Payroll, new work.
5/23.	10.21		Payroll, plumbing & New work.
	7.80	E	" surveys.
	4.50	S	G. & A. Bargania closet bowl.
	7.00	R	Options.
	2.45	E	Surveys.

6/14.	21.10	P	G. H. Hill trip to Suffolk regarding pipe loading.
	43.11	P	G. H. Hill paid for pipe loading.
6/12.	324.00	P	N. & W. freight 2 carloads pipe.
6/16.	410.40	P	" " " 3 carloads "
6/25.	7.79	S	Payroll—plumbing.
	4.06	S	Eddy Valve Co. Yard hydrant plumbing.
	1.52		Payroll new work.
	13.74	P	Payroll extension.
	6.11		Sundries.
7/ 5.	4.50		W. T. Burroughs—1 bbl. tar.
7/12.	351.00	R	5 rights of way for extension.
7/30.	175.00	R	2 " " " " "
7/18.	13.29		Miscellaneous expenses for extension.
	19.61	P	Payroll "
	.59		" new work.
	9.51	S	" plumbing.
	4.00	S	W. A. Cather 12 hydrant ends & unions.
8/ 9.	80.00	R	2 Rights of way for extension.
8/20.	30.24	P	Payroll, livery & expenses "
908			
	$7.52		Payroll—new work.
	10.80		W. T. Burroughs—9 gallons turpentine.
8/28.	115.63	P	L. A. Lawder hauling & laying 1,296'—6" pipe.
8/20.	9.75	S	Neptune Meter Co. ⅝" meter.
	4.78		Expenses.
	6.78	S	Payroll plumbing.
9/15.	49.20	P	Expenses Mr. Campbell regarding water works extension.
9/21.	58.52		Payrolls.
	44.74	S	H. Mueller—material.

1900—Plant Account.—*Continued.*

Date.	Amount.	Acct.	Description.
	.50	P	J. M. King hauling lead.
	7.26		Sundries.
	53.51		L. A. Lawder—Chge. City Road at Ada.
10/ 6.	130.00	R	W. H. Thompson 2 acres Ada Spring #21.
10/10.	84.00	P	Freight carload lead.
10/11.	1,321.95	P	Smith C. Co. 1 carload lead.
10/23.	32.90	P	" " " 658# jute.
	7.49		Sundries and payroll.
10/26.	291.80	P	N. & W. freight 6 carloads pipe.
	10.00	P	Fanng. Leslie damages crossing land.
10/30.	332.00		N. & W. siding at Ada.
	48.43	P	" freight 1 carload pipe.
10/23.	12.09		Payroll new work.
	1.15		Sundries " "
10/29.	42.88	P	Wythe Lead Co. lead.
10/23.	10.87	S	Payroll & sundries, plumbing.
11/ 7.	49.77	P	N. & W. freight 1 carload pipe.
11/14.	50.82	P	" " 1 " "
11/21.	46.86	P	" " 1 " "
11/28.	93.88	P	" " 2 carloads pipe.
11/ 9.	83.04	M	" " boiler from Erie.
11/12.	2,696.00	P	Glamorgan Co. 8 carloads pipe.
11/14.	128.30	P	Payroll unloading & laying & covering pipe.
	365.82	P	L. A. Lawder Ditching & hauling pipe.
11/23.	7.97		Payroll.
	37.05		B. P. Gro. Co. tools.
	1.08		G. N. Speiden—lumber.
	3.30		Bluefield Hardware Co.
	45.84	P	L. A. Lawder—hauling 3,540'—8" pipe.

	3.30		Bluefield Hardware Co.
	45.84	P	L. A. Lawder—hauling 3,540'—8" pipe.
	3.00	P	J. M. King hauling pipe & lead.
	11.53		Sundries.
11/27.	793.40	M	Erie Iron Works—Economic boiler.
11/15.	17.91	P	Boxing and freight on lead from Suffolk.
11/23.	7.66		Payroll.
	1.76		Sundries.
	1.47	S	Payroll—plumbing.
	1.79		Sundries.
11/24.	15.98	S	Smith C. Co.—plumbing supplies.
12/ 4.	21.50	P	J. W. Craig—laying pipe.
	44.55	P	B. P. Gro. Co. explosives.
909			
	$3,500.00	P	Glamorgan Co. pipe.
12/ 7.	47.10	P	N. W. freight 1 carload pipe.
12/24.	524.88	P	" 11 carloads pipe.
12/27.	156.79	P	" 3 " "
12/22.	10.88		Supplies distributed.
	6.60		Payroll—new work.
	20.18	S	" plumbing.
	8.68		G. N. Speiden—1 box sewer.
	.35	S	M. G. Whitlow hydrant coupling.
	1.53		Geo. Lumber Co. 1—6" trap & express.
	1.00		Solder and hauling.
	110.50		Bluefield Co. Telephone line to Ada.
	238.31	P	Payroll pipe laying.
	931.93	P	L. A. Lawder—ditching & covering.
12/29.	23.24	P	Freight on 13 water gates.
	5.49	S	Plumbing material.

1900—Plant Account.—*Continued.*

Date.	Amount.	Acct.	Description.
	620.00	R	W. H. Thompson, Bal. Ada Spring #21 land.
	150.00	R	" Ada Station Lot.
	$18,592.93		
	683.10		Deduct for plumbing collections.
	$17,909.83—Total.		

1900—Income.

Date.	Amount.	Description.
1/31.	$159.17	N. & W. R. R. January consumption.
2/28.	229.03	" " February "
	5.05	Domestic revenue collected in February.
		" " " company houses 1st Quar.
3/31.	111.87	N. & W. R. R. March Consumption.
	224.58	Domestic revenue collected in March.
	81.13	N. & W. R. R. office consumption 1st Quar.
4/16.	9.75	" April consumption.
4/30.	257.30	Domestic revenue collected in April.
	505.41	" " " " May.
5/31.	707.80	N. & W. R. R. May consumption.
	240.32	Domestic revenue company houses, 2nd Quar.
6/30.	113.63	N. & W. R. R. June consumption.
	279.80	Domestic revenue collected in June.
	278.69	N. & W. R. R. office consumption 2nd Quarter.
7/11.	7.47	

910

7/31	$281.35		N. & W. R. R. July consumption.

7/31.	$281.35	N. & W. R. R. July consumption.
	693.54	Domestic revenue collected in July.
8/31.	545.18	" " " " August.
	119.10	N. & W. R. R. August consumption.
9/30.	97.14	" Sept. "
	111.05	Domestic revenue company houses 3rd quarter.
	158.83	" " collected in Sept.
10/31.	143.42	N. & W. R. R. October consumption.
	504.76	Domestic revenue collected in October.
11/30.	576.90	" " " " November.
	214.70	N. & W. R. R. November consumption.
12/31.	324.45	" December "
	337.34	Domestic revenue collected in December.
	111.73	" " company houses 4th quarter.
	2,919.51	" " to 12/31 uncollected.
	210.00	Hydrant rental for years.
	$10,560.00	Deduct for rents not collectable.
	219.95	
	$10,340.05—Total.	

1900—Operation.

1/ 7.	64.55	4 carloads coal.
1/15.	66.67	G. H. Hill salary.
1/19.	93.65	Payroll pumping and labor.
	93.23	J. R. Calfee hauling 4 carloads coal.
	3.57	W. P. Hawley 28 gallons oil.
	2.50	Livery.

1900—Plant Account.—*Continued.*

1900—Operation.—*Continued.*

Date.	Amount.	Description.
	4.45	E. A. Surface, blacksmithing.
	1.50	Hauling rock.
	6.65	Commission on water rents.
2/19.	58.30	3 carloads coal.
2/10.	66.67	G. H. Hill salary.
	130.17	Payroll, pumping & labor.
	82.61	J. R. Calfee hauling 3 carloads coal.
	33.80	Brooks Oil Co.—1 bbl. cylinder oil.
	1.37	W. B. Hawley—10½ gallons oil.
3/27.	51.91	2 carloads coal.
3/ 9.	66.67	G. H. Hill salary.
3/20.	96.99	Payroll pumping and labor.
	73.14	J. R. Calfee hauling 3 carloads coal.
	1.30	W. G. Hawley 10 gallons oil.
	4.22	Sundries.
911		
4/16.	$40.54	2 carloads coal.
4/13.	66.67	G. H. Hill salary.
	66.90	Payroll—pumping & labor.
	59.64	J. R. Calfee hauling 3 carloads coal.
	2.00	Bluefield Hardware Co. Sundry hardware.
	.20	G. N. Speiden 1 pc. sewer pipe.
	11.80	Sundries.
4/24.	6.59	N. & W. R. R. supplies.
	31.75	Stone Printing Co. 1,000 rec. reg. & bills.

	6.19	Commission on water rents.

	6.19	Commission on water rents.
5/23.	66.67	G. H. Hill salary.
	44.60	Payroll pumping.
	67.91	J. R. Calfee hauling 3 carloads coal.
	2.10	Sundry bills.
6/ 2.	47.35	2 carloads coal.
6/26.	52.62	3 carloads coal.
6/14.	66.67	G. H. Hill salary.
6/25.	89.11	Payroll pumping & labor.
	62.03	J. R. Calfee hauling 3 carloads coal.
	1.35	Sundries.
7/20.	75.29	3 carloads coal.
7/12.	66.67	G. H. Hill salary.
7/18.	83.18	Payroll, pumping & labor.
	76.74	J. R. Calfee hauling 3 carloads coal.
	30.30	Sundry bills.
	6.58	Commission on water rents.
8/30.	64.13	3 carloads coal.
8/14.	66.67	G. H. Hill salary.
8/20.	99.82	Payroll pumping & labor.
	76.78	J. R. Calfee hauling 3 carloads coal.
	2.50	Livery to Beaver Pond.
	1.78	Standard Oil Co. 5 gal. cylinder oil.
	.50	Rivets and hauling oil.
9/21.	70.44	3 carloads coal.
9/10.	1.41	Supplies.
9/21.	96.03	Payroll, pumping & labor.
	82.39	J. R. Calfee hauling 3 carloads coal.
	3.25	T. M. Calfee hauling cinders.
	18.28	Standard Oil Co. cylinder oil.

1900—Plant Account.—*Continued.*

1900—Operation.—*Continued.*

Date.	Amount.	Description.
	.69	G. N. Speiden Lumber.
10/15.	40.23	2 carloads coal.
10/23.	96.10	Payroll pumping & labor.
	48.17	J. R. Calfee hauling 2 carloads coal.
	4.12	Sundries.
10/31.	6.09	Commission on water rents.
11/19.	60.14	3 carloads coal.
912		
11/23.	$89.44	Payroll pumping and labor.
	71.00	J. R. Calfee hauling 3 carloads coal.
	3.00	T. M. " " cinders.
	43.02	Sundry bills.
12/17.	58.91	3 carloads coal.
12/10.	66.67	G. H. Hill salary.
	82.25	Payroll pumping & labor.
	98.21	J. R. Calfee hauling 4 carloads coal.
	1.50	T. M. " " cinders.
	6.25	Bluefield Telephone Co. Ada Phone rent.
12/31.	200.00	G. H. Hill salary Aug.-Sept.-Oct.
	$3,695.04	
	1,770.00	Pro rata General Expenses for Year.
	$5,465.04—Total.	

1900.—Maintenance.

2/20.	1.65	Bluefield Hardware Co. hardware P. H. repairs.
	.60	M. G. Whitlaw, pipe " "
	48.00	H. B. Shelton lumber & drain boxes.
	3.05	Hauling, etc.
3/20.	7.87	W. A. Cather—pump repairs.
	33.61	Coal shed—material & labor.
4/20.	50.62	H. R. Worthington pump repair parts.
5/23.	44.75	Repair labor payroll.
9/21.	9.75	Quaker City Rubber Co.—gaskets.
	6.75	H. Mueller pump supplies.
	9.52	Sundries.
	$216.17	—Total.

913 Résumé of Plant Account, Income, and Operation for 1900.

Cost of Plant and Property incurred prior to 1900		$79,406.70
" " " " " during year		17,909.83
Total Cost of Plant and Property at end of Year		$97,316.53
Income from Service during year		$10,340.05
Expenditure for operation during year	$5,465.04	
" " maintenance " "	216.17	
Total Expenditure for Operation and Maintenance during Year		5,681.21
Net Return Applicable to Depreciation, Bond Interest and Dividends		$4,658.84

Résumé of Bond Interest and Dividends for 1900.

Pro Rata Interest paid on Outstanding Securities	$1,935.00
" " Dividends for year	0.00
" " Amount Withdrawn for Bond Interest and Dividends in 1900	$1,935.00

914 1901.

In 1901 the usual amount of service installation and plumbing work was done, but most of the attention was given to the completion of the Ada Pumping Station and 8" cast iron force main to the city. Upon its completion the station consisted of a rough frame structure housing the present Worthington pump, and an Erie Economic boiler. During the year the work on the reservoir and dam aws begun, and the original work at Ada Spring was started. Over $700 was spent in the final appeal suit of W. W. Sanders. The land for the site of the twin tanks, consisting of 15¼ acres was purchased in October.

Almost 30% of the revenue for the year came from the N. & W. R. R. and a little more than 70% from domestic consumption.

In 1901 the books of the Company were transferred to the Philadelphia office, and the pro rata division of General Expense includes the division of $1,200 that had been charged against the company by the Philadelphia office to cover salaries at Philadelphia. On July 31, the $125,000 7% bond issue of 1890 was completely cancelled; $23,000 of the issue having been cancelled prior to this date and $102,000 were at this time exchanged for $102,000 of the $130,000 mortgage, of which the other $28,000 was sold outright.

915 No dividend was declared for the year 1901. The bond interest for the year has been pro rated in the usual way.

Date.	Amount.	Acct.	Description.
1/14.	$598.96	P	L. A. Lowder—ditching.
	409.92	P	Payroll—laying & covering pipe.
	2,720.25	P	Pipe.
1/22.	22.50	P	Roanoke B. & W. Co. 5 bbls. tar.
	4.60		Payroll—sundries.
	26.75	P	B. P. Gro. Co. explosives.
	6.00		Livery Co. teams to Ada.
	26.36		W. A. Cather—supplies.
	.36		G. N. Speiden Co. timber.
	1.95		Bluefield Hardware Co.—supplies.
	187.65	P	W. T. Burroughs painting 8" pipe.
	4.63	P	W. Hicks Co. Corp. for valves.
	11.72		Sundries.
1/23.	238.25	P	N. & W. Freight 4 carloads pipe.
1/22.	4.50		Payroll.
	1.86		W. A. Cather sundries.
	43.58	P	Cuyler & Mohler 1,000'—½" pipe.
	25.24	S	Payroll—plumbing.
	.75	S	Bluefield Hardware Co. 1 oil gate—plumbing.
	5.63	S	W. A. Cather sundries "
	43.58	S	Cuyler & Mohler 1,000'—½" pipe "
	1.65	S	Sundries "
2/ 5.	2,500.00	P	Glamorgan Co. pipe.
	470.35	P	N. & W. freight 8 carloads pipe.
2/19.	7.40	P	" unloading pipe & boiler.
2/11.	20.82	P	B. P. Gro. Co. explosives.
2/14.	322.90	P	Smith C. Co. gate valves.

1901—Plant Account.—*Continued.*

Date.	Amount.	Acct.	Description.
2/16.	1,169.76	P	Payrolls, pipe laying.
2/21.	.96	P	Labor.
	.38		Bluefield Hardware Co. hardware.
	11.32		Cash distribution.
	30.00	L	A. J. O'Hearn C. C. Recording deed for extension N. work.
	7.87		Payroll.
	4.42	S	" plumbing.
	2.00	S	Sundries "
3/12.	3,000.00	P	Glamorgan Co. pipe.
3/14.	1,080.00	M	Worthington Co. Ada pump.
3/ 5.	275.94	P	N. & W. freight 5 carloads pipe.
3/19.	1,031.81	P	Payroll—trenching, laying & covering pipe.
	127.79		Sundry bills.
	438.50	P	Wythe L. & Z. Co. 10,023# lead.
3/23.	60.00	B	Payroll—foundation Ada station.
	33.71		N. & W. sundry freight bills.
3/19.	2.12		Payroll labor.
	37.91	S	H. Mueller Co.—½" taps.
917			
3/30.	$2.95	L	Clark U. S. Ct. Recording Mandate Closing Suit.
3/19.	9.38		Miscellaneous labor and bills.
4/19.	1,098.85	P	Payroll & L. A. Lowder, trench, laying & covering.
4/27.	54.55	B	Roofing Ada Station.
	19.66		Payroll.
	14.80	P	B. P. Gro. Co. explosives.
	4.61		Bluefield Hardware Co. hardware.

	17.88		Cather—sundries.
	12.44		G. N. Speiden Co., lime, cement, etc.
	7.50		Flat Top Gro. Co.—3 bbls. cement.
	12.62		Sundry cash.
	1.20		Payroll.
	.92		Freight.
	12.40	S	Payroll—plumbing.
	3.90	S	W. A. Cather—24 hydrant tops.
	.60	S	Sundries—plumbing.
5/ 7.	67.75	B	Erecting Ada Station.
	59.87		Miller Sup. Co. iron, fittings, etc.
	63.72		Smith Co. gate, jute, etc.
5/13.	150.00		Moving county road at Ada.
	498.98	P	L. A. Lowder—pipe line work.
	157.85	B	Station lumber.
	254.47	P	Laying and covering pipe.
5/15.	32.08	P	N. & W. Unloading pipe, pump & boiler.
5/20.	10.50		Payroll labor.
	11.90		Sundries—cash.
	176.63		" —bills.
	.75	S	Bluefield Hardware Co. S. & W. cock.
	6.00	S	Payroll labor.
5/ 7.	70.56	S	Miller Supply Co. bibbs & fittings—plumbing.
5/ 9.	10.00	S	City Treas. 1901 License tax "
	15.00	S	Payroll labor "
5/20.	4.30	S	Bluefield Hardware Co. rasp & file "
	.65	S	H. Becker Clerk, Apr. salary "
6/18.	816.17	W	Payroll, lbr. etc. for dam.
	52.37		Payroll & sundry bills.
	34.50	M	Miller Supply Co., tools, etc., for Ada pump.

1901—Plant Account.—*Continued.*

Date.	Amount.	Acct.	Description.
6/30.	50.00	W	Bailey & Clafee lumber for dam.
6/18.	16.19		Payroll.
	10.08	S	" plumbing.
	9.50	S	Neptune Meter Co. 5/8" meter "
	2.22	S	Cash sundries "
	36.20	S	Smith C. Co. 6 hydrants
6/12.	548.70	P	Glamorgan Co. pipe.
6/21.	700.00	L	Expense final appeal Sander's Suit.
	220.00	R	Examining titles and preparing deeds to Ada Property and rights of way thereto.
918			
7/ 9.	$472.30		L. A. Lowder work.
	203.23	W	Payroll on dam.
	110.21	W	Bailey & Calfee lumber for dam.
7/16.	8.23		Sundries.
7/27.	115.00	W	Log contract.
7/16.	4.34		Payroll.
	27.72	S	H. Mueller—corporation cocks.
	6.05	S	Plumbing payroll.
	3.80	S	Hydrant tops.
8/31.	4.01		Expense, telegrams, etc.
8/23.	5.00	P	N. & W. freight 1 carload pipe.
8/31.	79.83	P	Water works extension.
	1,687.98	P	" " "
	143.45	P	" " "
	746.85	P	" " " payrolls.

9/30.	70.63		Water Works.
	890.87	P	" " extension payroll & bills.
	600.00	W	Balance to W. H. Thompson on 2-*a* Bailey Spring.
10/31.	801.89		Water Works Ada.
	1,304.00	R	15¼ acres land for Twin tanks site.
11/30.	4.02		Bluefield Hardware Co.
	1.60	B	J. R. Calfee—hauling brick to Ada.
	17.50	M	Garloch Packing Co., valves for pump.
	6.30	M	Geo. Lumber Co., brick & clay for Ada pump.
	27.50	B	Carey Mfg. Co., 10 squares roofing, Ada.
	167.36	B	Saxon Lime & Lumber Co., supplies for Ada Station.
	259.91	W	Payroll—Adam Dam.
	8.69	S	Plumbing.
12/31.	195.00	M	Air chamber and House of Ada.
	$28,339.12		
	289.28		Deduct for plumbing collections.
	$28,049.84		Total.

1901—Income.

Date.	Amount.	Description.
1/21.	19.50	N. & W. R. R. office consumption, 4th quarter, 1900.
	3.02	Domestic Water revenue collected in January.
	348.02	N. & W. R. R. January consumption.
2/28.	340.50	" February "
	1.75	Domestic Water revenue collected in February.
3/31.	284.28	N. & W. R. R., March consumption.

6569

1901—Plant Account.—*Continued.*

1901—Income.—*Continued.*

Date.	Amount.	Description.
	$60.67	Domestic water revenue collected in March.
4/30.	274.63	N. & W. R. R. April consumption.
	215.20	Domestic revenue collected in April.
5/31.	317.95	N. & W. R. R. May consumption.
	836.13	Domestic revenue collected in May.
6/29.	415.65	" " " June.
	271.04	N. & W. R. R. June Consumption.
7/22.	218.75	Domestic revenue company houses 1st & 2nd quarters.
	20.50	N. & W. R. R. office consumption—2nd quarter.
7/31.	381.68	N. & W. R. R.—July consumption.
	18.17	N. & W. R. R. Consumption Passenger Station & W. End to 7/31.
	799.46	Domestic revenue collected in July.
8/31.	469.34	N. & W, R. R., August consumption.
	714.58	Domestic revenue collected in August.
9/30.	381.79	" " " September.
	107.58	" " company houses, 3rd quarter.
	10.53	N. & W. R. R. collected by Adjustment.
10/18.	597.34	" September consumption.
10/29.	130.35	Domestic revenue collected by N. & W. paymaster.
10/31.	779.06	" " " in October.
11/14.	529.73	N. & W. R. R. October Consumption.
11/30.	11.38	Domestic revenue adjustment.
11/30.	678.90	" " collected in November.
12/18.	393.88	N. & W. R. R. November consumption.
12/31.	519.45	Domestic revenue collected in December.

12/31.	519.45	Domestic revenue collected in [illegible]
12/31.	467.54	N. & W. R. R., December consumption.
	107.65	Domestic Revenue company Houses—4th Quarter.
	3,041.66	" " to 12/31, uncollected.
	$13,787.66	Total.

1901—Operation.

1/21.	59.51	3 carloads coal.
1/22.	70.00	Payroll, pumping & labor.
	74.76	J. R. Calfee, hauling 3 carloads coal.
	3.75	T. M. Calfee " cinders.
	2.25	Bluefield Gro. Co., 15 gallons oil.
	1.00	Livery team to Beaver Pond.
	13.29	W. A. Cather, supplies.
	.60	Sundries.
	66.67	G. H. Hill—salary.
2/25.	108.42	4 carloads coal.
2/ 6.	6.53	Commission on Water collection.
	66.67	G. H. Hill—salary.
920		
2/19.	$9.81	N. & W. M. P. charges.
2/21.	92.28	Pumping & labor payroll.
	103.24	J. R. Calfee, hauling 4 carloads coal.
	1.50	T. M. Calfee, hauling cinders.
	16.93	Sundry bills.
3/25.	75.39	4 carloads coal.
3/19.	66.67	G. H. Hill, salary.
	86.70	Payroll, pumping & labor.

1901—Plant Account.—*Continued.*

1901—Operation.—*Continued.*

Date.	Amount.	Description.
	61.32	J. R. Calfee, hauling 3 carloads coal.
	3.50	T. M. Calfee, hauling 14 lds. cinders.
	16.16	Sundries.
4/23.	82.11	4 carloads coal.
4/27.	66.67	G. H. Hill, salary.
	93.05	J. R. Calfee, hauling 4 carloads coal.
	89.29	Payroll pumping & labor.
	13.10	Sundries.
	6.53	Commission on Water collection.
5/23.	67.08	3 carloads coal.
5/ 7.	26.25	Stone Printing Co., Water Register Bills & Orders.
5/ 9	66.67	G. H. Hill, salary.
5/15.	10.20	N. & W. Ry. Supplies.
5/20.	55.10	Payroll, pumping & labor.
	49.95	J. R. Calfee, hauling 2 carloads coal.
	2.25	T. M. Calfee, hauling 9 loads cinders.
	18.25	Sundry supplies.
6/ 3.	2.25	Stone Printing Co.—Index Water Register.
6/10.	66.67	G. H. Hill—salary.
6/18.	107.60	Payroll—pumping & labor.
	25.55	J. R. Calfee, hauling 1 carload coal.
	1.25	T. M. Calfee " 5 loads cinders.
	28.79	Sundry bills.
6/21.	46.08	2 carloads coal.
6/12.	40.04	2 carloads coal.

7/ 9.	66.67	G. H. Hill, salary.
7/16.	134.75	Payroll—pumping, labor.
	27.02	J. R. Calfee, hauling 1 carload coal.
	5.55	Cash sundries.
7/27.	6.79	Commission on water rents.
8/ 1.	66.67	G. H. Hill, salary.
	108.85	5 carloads coal.
8/31.	50.55	2 carloads coal.
	189.84	Payroll and fund.
	66.67	G. H. Hill, salary.
	251.37	Payroll & sundries.
	298.04	" " "
9/30.	92.47	5 carloads coal and freight.
	9.25	Expense.
921		
	$10.51	N. & W. R. R.
10/29.	6.52	G. H. Hill.
	3.00	N. & W. R. R.
	16.54	Virginia Land Co.
11/14.	100.42	N. & W. R. R. 5 carloads coal.
11/30.	1.56	Sundries.
	10.23	W. A. Cather, material & supplies.
	7.34	Sundries.
	1.04	"
	207.82	Payroll, pumping & labor.
12/31.	9.28	Sundries.
	437.17	Payroll & sundries.
12/ 9.	102.66	N. & W. R. R. 5 carloads coal.
12/31.	132.56	" " " " " 6 carloads coal.
	6.49	Commission on Water rents.

1901—Plant Account.—*Continued.*

1901—Operation.—*Continued.*

Date.	Amount.	Description.
	266.68	G. H. Hill—Salary Sept.–Dec. inc.
	104.00	H. H. Kennedy Salary May–Dec. inc.
	$5,148.46	
	44.20	Deduct Refund on January Coal.
	$5,104.26	
	2,520.00	Pro Rata General Expense and Philadelphia Salaries charged to Bluefield for year.
	$7,624.26	Total.

1901—Maintenance.

6/18.	98.19	Miller Supply Co. tubes for Beaver Pond boiler.
7/16.	1.15	T. M. Calfee—1 yard sand.
	104.56	Miller Supply Co. 33 tubes for Beaver Pond "
	9.50	Neptune Meter Co. meter.
	51.42	W. A. Cather sundry repairs.
7/27.	12.00	Livery Beaver Pond.
8/31.	34.26	N. & W. repair bills.
	$311.08	Total.

922 Résumé of Plant Account, Income and Operation for 1901.

Cost of Plant and Property incurred prior to 1901....		$97,316.53
" " " " " " during year ...		28,049.84
Total Cost of Plant and property at end of Year		$125,366.37
Income from Service during Year.....		$13,787.66
Expenditure for operation during year....	$7,624.26	
" " maintenance " "	311.08	
Total Expenditure for Operation and Maintenance During Year		7,935.34
Net Return Applicable to Depreciation, Bond Interest and Dividends		$5,852.32

Résumé of Bond Interest and Dividends for 1901.

Pro Rata Interest paid on Outstanding Securities....	$2,693.00
" " Dividends for Year	0.00
" " Amount withdrawn for Bond Interest and Dividends in 1901	$2,515.00

923 1902.

In 1902 there seems to be no record of any mains having been laid, but the indications are that quite a number of services were installed. The work on the timber dam and reservoir, and the first development at Ada Spring which consisted of only a stone wall to divert the water, was completed. This work included an 8" cast iron line leading from the reservoir to Ada Station, from which the pump took suction, and also a 10" cast iron line from the spring to the reservoir, which was built for us in conducting the water direct from the spring to the station. It has been used entirely for this purpose since the use of the reservoir was discontinued. A railway siding was placed at Ada Station in 1902, and nearly $400 was spent in the final costs of the Sanders' suit.

Late in 1901 the system of bookkeeping was changed with the result that but few of the expenditures show in detail on the cash book, as has been true of the earlier years. Practically all expenditures are entered only in the ledger and journal, and in but very little detail, so that for the following years, up until 1907 when vouchers are available, the plant account, operation and

maintenance accounts may not be quite as accurately separated as in other years.

924 In 1902 about 60% of the revenue came from domestic consumption and 40% from the N. & W. R. R.

In changing the system of bookkeeping, the General Expense account was discontinued and the items entering into it were placed in the expense accounts of the various lines of business. However, no such division was attempted in connection with bonds, and bond interest, and the latter has been pro rated in the same way as for previous years. The Philadelphia salaries charged against Bluefield have also been pro rated, as have the taxes, based on the amount paid, and on the plant account, for 1905. No dividend was declared for the year 1902.

Date.	Amount.	Acct.	Description.
1/31.	$5.45	B	House at Ada.
	83.48	S	Service Construction.
	17.86		Payroll—Extension.
	18.14	S	Service—Construction labor.
2/28.	5.95	S	Freight on pipe for service construction.
	2.36	S	Labor " " "
3/31.	1.28	S	" " " "
4/11.	382.39	L	A. W. Reynolds ½ cost in suit—W. W. Sanders.
4/30.	5.44	S	Labor on service construction.
5/31.	32.82	W	Construction on Dam.
	16.68	S	" " Services.
6/30.	50.49		" " extensions.
	61.44	S	" " Services.
7/31.	10.26	R	Fence at Ada.
	2.24		Pipe line and service construction.
	21.42	S	Service construction.
8/31.	10.65	S	" "
	24.17	S	" "
9/30.	219.99	S	" "
	144.89	S	" "
10/31.	129.99	S	" "
	11.26		Tools.
	123.92	S	Service construction payroll.
	6.04	S	" " "
11/30.	49.69	S	" " "
	2.95		Tools.
	112.65	P	3755# lead.

1902—Plant Account.—*Continued.*

Date.	Amount.	Acct.	Description.
	2,171.85	P	120 tons 6" and 8" pipe.
	122.00	P	Specials and valves.
12/31.	140.03	S	Service construction.
	$3,987.78—Total.		

1902—Income.

Date.	Amount.	Description.
1/31.	475.33	N. & W. R. R. January consumption.
	132.75	Domestic revenue collected in January by N. & W. P. M.
	363.44	Domestic revenue collected in January.
2/28.	247.90	" " " February.
	518.25	N. & W. R. R. February consumption.
3/31.	609.24	Domestic revenue collected in March.
	108.00	" " company houses, 1st quarter.
926		
	$543.12	N. & W. R. R. March consumption.
4/30.	784.44	Domestic revenue collected in April.
	627.10	N. & W. R. R. April consumption.
	143.25	Domestic revenue collected by N. & W. Paymaster.
5/31.	601.33	N. & W. R. R. May consumption.
	461.40	Domestic revenue collected in May.
6/30.	518.56	N. & W. R. R. June consumption.
	660.11	Domestic revenue collected in June.
	103.70	" " Company Houses 2nd quarter.
7/31.	926.96	" " collected in July.
	143.25	" " " by N. & W. paymaster.

	568.20	N. & W. R. R. July consumption.
8/31.	505.17	" " August "
	501.49	Domestic revenue collected in August.
9/30.	525.55	N. & W. R. R. September consumption.
	453.32	Domestic revenue collected in September.
	104.00	" " Company houses—3rd quarter.
	9.75	N. & W. R. R. office consumption—3rd quarter.
10/31.	733.35	Domestic revenue collected in October.
	435.63	N. & W. R. R. October consumption.
	138.00	Domestic revenue collected by N. & W. paymaster.
11/30.	803.36	" " " in November.
	466.59	N. & W. R. R. November consumption.
12/31.	674.18	Domestic revenue collected in December.
	97.93	" " company houses 4th quarter.
12/31.	610.63	N. & W. R. R. December consumption.
	1,405.14	Domestic revenue to 12/31 uncollected.
	$16,000.42	
	498.78	Deduct rents not collectable.
	$15,501.64	
	142.12	Cash profit on plumbing.
	$15,643.76—Total.	

1902—Operation.

1/31.	87.96	Coal.
	6.75	Commission on water rents.
	2.13	G. H. Hill.
	28.17	Hauling coal.

1902—Plant Account.—*Continued.*

1902—Operation.—*Continued.*

Date.	Amount.	Description.
	12.50	Phone rent.
	34.88	G. H. Hill.
	186.18	Payroll—Pumping & labor.
927		
2/28.	$10.46	
	180.97	Payroll, pumping & labor.
	89.62	N. & W. coal.
	39.00	N. & W. Adjusting water rents.
3/31.	188.23	G. H. Hill, labor & hauling coal.
	99.12	N. & W. coal.
4/30.	97.96	Labor & hauling coal.
	166.80	Payroll, pumping & labor.
	11.92	G. H. Hill.
	117.20	N. & W coal.
	7.16	N & W. Commission on water rents.
5/31.	331.35	Labor & hauling coal.
	104.10	N. & W coal.
6/30.	89.84	" "
	207.14	Labor pumping & hauling coal.
	10.73	Tools.
7/31.	125.30	Labor, telephone & hauling coal.
	201.20	Payroll, pumping & labor.
	7.16	N. & W. Commission on Water rents.
	121.71	Coal and hauling.
8/31.	134.99	" " "

	119.82	Hauling & labor.
	198.40	Payroll, pumping & labor.
9/30.	128.35	Coal.
	182.77	Payroll & hauling.
	282.22	" pumping & labor.
10/31.	133.47	Labor, coal & hauling.
	285.60	Payroll, pumping & labor.
	11.45	Hauling & labor.
	106.67	Coal.
	6.90	N. & W. Commission on Water rents.
11/30.	427.54	Labor, hauling & coal house rent.
	128.92	Coal.
12/30.	3.00	Traveling expense.
	3.42	Rebates.
	395.88	Payroll, pumping & labor.
	141.85	Hauling & sundry expense.
	187.33	Coal.
	800.00	G. H. Hill ⅔ salary for year.
	127.50	H. H. Kennedy ⅔ " " "
	$6,371.62	
	600.00	Pro rata Philadelphia salary and rent charged to Bluefield.
	1,210.00	Pro rata Taxes based on 1905.
	$8,181.62—Total.	
928		1902—Maintenance.
12/31.	$123.44	Boiler Renewals.
	$123.44—Total.	

Résumé of Plant Account, Income, and Operation for 1902.

Cost of Plant and Property incurred prior to 1902...		$125,366.37
" " " " " " during year....		3,987.78
Total Cost of Plant and Property at end of Year		$129,354.15
Income from Service during Year.....		$15,643.76
Expenditure for operation during year...	$8,181.62	
" " " " " ...	123.44	
Total Expenditure for Operation and Maintenance During Year		8,305.06
Net Return Applicable to Depreciation, Bond Interest and Dividends.....		$7,338.70

Résumé of Bond Interest and Dividends for 1902.

Pro Rata Interest Paid on Outstanding Securities.....	$2,812.00
" " Dividends for Year.....	0.06
" " Amount Withdrawn for Bond Interest and Dividends in 1902.....	$2,550.00

929 1903.

In 1903 the new work on the distribution system consisted chiefly in the installation of services. A new 100 H. P. horizontal return tubular boiler was placed at Ada Station for the purpose of relieving the load on the original boiler. On the books of the Company, the cost of the installation of this boiler is considered an operating or maintenance charge. In this past cost investigation it is considered as a plant addition or betterment, and is, therefore, charged to plant account.

As in the previous year about 60% of the revenue came from domestic consumption and 40% from the N. & W. R. R.

It was in this year that the cancellation of the 6%—$130,000 mortgage was made. In the years following 1903, loans were made to the company by the stockholders and J. M. Wirgman. Up until 1908 when the water business became a separate enterprise, the interest on these loans *are* pro rated in the same manner as the bond interest has been.

Date.	Amount.	Acct.	Description.
1/31.	45.75	S	Service Construction.
1/31.	$264.24	S	Service construction.
	1,239.83	M	New boiler, labor and hauling.
	271.34	M	" " " " "
	27.85	M	" " " " "
	10.00	M	Use of N. & W. wrecking car to unload boiler.
2/28.	1.80	S	Service construction.
	29.13	S	" "
3/31.	30.34	S	" "
	389.45	M	100 H. P. boiler for Ada Station.
4/30.	26.75		Service construction & new work.
	148.19	M	100 H. P. boiler for Ada Station.
5/31.	516.20	S	Service construction.
6/30.	60.54	S	" " labor & material.
	75.03	M	100 H. P. boiler for Ada Station.
7/31.	34.12	S	Service construction labor.
	848.03	S	" " material.
8/ 5.	89.74	S	" " freight on pipe.
8/31.	25.70	B	House at Ada pump.
	111.34	S	Service construction.
	86.38	S	" "
9/30.	98.58	S	" "
	543.69	S	" " material.
	38.62	B	Stable & house at Ada.

1903—Plant Account.—*Continued.*

Date.	Amount.	Acct.	Description.
10/31.	556.24	S	Service construction.
	263.32	S	" "
11/30.	198.03	S	" "
	27.59	S	" "
	103.06	S	
12/31.	.25	S	Meters.
	15.06	B	Shop and building.
	41.71	S	Service construction.
	191.58	S	Meters.
	141.42	S	Service construction.
	19.39	S	Meters.
	384.80		Material & supplies not used.
	145.00		Horse, saddle & blanket.
	1,000.00		Rock crusher boiler & engine.
	$8,100.09—Total.		

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1903—Income.

1/31.	$556.62	N. & W. R. R. January consumption.
	140.25	Domestic revenue collected by N. & W. paymaster.
	505.22	" " " in January.
2/28.	438.49	" " " " February.
	494.43	N. & W. R. R. February consumption.
3/31.	259.33	Domestic revenue collected in March.
	640.77	N. & W. R. R. March consumption.
4/30.	826.52	Domestic revenue collected in April.
	90.01	" " Company houses, 1st quarter.

	570.74	N. & W. R. R. April consumption.
	176.50	Domestic revenue collected by N. & W. paymaster.
5/31.	1,051.74	" " " in May.
	315.78	N. & W. R. R. May consumption.
6/30.	401.97	Domestic revenue collected in June.
	86.38	" " Company houses—2nd quarter.
	307.65	N. & W. R. R. June consumption.
7/31.	1,335.86	Domestic revenue collected in July.
	162.38	" " " by N. & W. paymaster.
	487.90	N. & W. R. R. July consumption.
8/31.	1,011.50	Domestic revenue collected in August.
	757.13	N. & W. R. R. August consumption.
9/30.	800.16	" September "
	876.23	Domestic revenue collected in September.
	81.75	" " Company houses—3rd quarter.
10/31.	1,706.41	" " collected in October.
	907.90	N. & W. R. R. October consumption.
	172.11	Domestic revenue collected by N. & W. paymaster.
11/30.	725.31	N. & W. November consumption.
	867.23	Domestic revenue collected in November.
12/31.	1,067.41	N. & W. R. R. December consumption.
	485.87	Domestic revenue collected in December.
	75.50	" " Company houses—4th quarter.
	1,531.65	" " to 12/31 uncollected.
	$19,914.70	
	132.94	Cash profit on plumbing.
	$20,047.64	

1903—Plant Account.—*Continued.*

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1903—Operation.

Date.	Amount.	Description.
1/31.	$190.44	Coal and freight.
	7.31	N. & W. Commission on water rents.
	284.89	Payroll, pumping & labor.
2/28.	233.35	" " " "
	155.75	Coal and freight.
3/31.	4.95	Sundries.
	271.07	Payroll pumping, labor & hauling.
	298.85	Coal and freight.
4/30.	378.99	Pumping, labor & material.
	192.49	Coal and freight.
	8.83	N. & W. Commission on water rents.
5/31.	605.86	Pumping, labor & supplies.
	44.50	T. M. Calfee.
	141.28	N. & W. coal & freight.
6/30.	588.05	Pumping, labor and supplies.
	25.75	J. Hogan, Books, bills, register.
	218.08	N. & W. coal and freight.
7/31.	3.45	R. H. Tilson, hauling.
	463.04	Pumping, labor & supplies.
	331.19	Hauling.
	7.78	N. & W. Commission on water rents.
	231.26	N. & W. coal & freight.
8/31.	355.10	Payroll and labor.
	160.00	Pumping.
	323.66	N. & W. coal and freight.

	53.70	Hauling coal.
	305.89	Labor & supplies.
9/ 8.	96.42	Freight 3 cars coal.
9/30.	404.71	Payroll, pumping & labor.
	460.05	N. & W. coal & freight.
	77.76	Hauling coal.
	107.97	Stores & supplies.
10/31.	456.74	N. & W. coal & freight.
	86.70	Hauling coal.
	188.57	Wood & supplies.
	315.54	Pumping & labor.
	87.50	Inspection.
	8.61	N. & W. Commission on water rents.
11/30.	269.76	Pumping & labor.
	86.25	Inspection.
	242.10	Freights—hauling, etc.
	352.29	N. & W. coal.
	277.13	Hauling & labor.
933		
12/31.	$589.09	N. & W. coal & freight.
	113.00	Hauling coal.
	179.45	Labor & supplies.
	17.80	Hauling & unloading coal.
	176.29	Pumping.
	66.88	Labor & supplies.
	89.10	Inspection.
	14.12	Shopwork.
	400.00	2/3 G. H. Hill salary—Jan. to June inc.
	500.00	2/3 W. McCarthy " July to Dec. "

1903—Plant Account.—*Continued.*

1903—Operation.—*Continued.*

Date.	Amount.	Description.
	50.00	2/3 H. H. Kennedy" Jan. to June "
	400.00	2/3 " " " " July to Dec. "
	$11,999.34	
	630.00	Pro Rata Philadelphia salary and rent charged to Bluefield.
	1,250.00	Pro Rata Taxes Based on 1905.
	$13,879.34	Total.

1903—Maintenance.

11/30.	$375.06	Boiler tubes.
12/31	290.50	Resetting boiler.
	$665.56	Total.

934 Résumé of Plant Account. Income, and Operation for 1903.

Cost of Plant and Property incurred prior to 1903....		$129,354.15
" " " " " " during year ...		8,100.09
Total Cost of Plant and Property at end of Year		$137,454.24
Income from service during year		$20,047.64
Expenditure for operation during year...	$13,879.34	
" " income " " ...	665.56	
Total Expenditure for Income and Operation During Year		$14,544.90
Net Return Applicable to Depreciation, Interest and Dividends		$5,502.74

Résumé of Bond Interest and Dividends for 1903.

Pro Rata Interest Paid on Outstanding Securities....	$1,380.00
" " " " on loans from stockholders..	1,100.00
" " Dividends for Year	0.00
" " Amount Withdrawn for Interest and Dividends in 1903	$2,480.00

935 1904.

In 1904 practically all the new work on the distribution system consisted in Service and meter installations. The Ada dam was improved by placing a rock ballast in the pockets of the wooden cribwork, and a ditch was excavated east of the reservoir to divert surface water and prevent pollution from a nearby stable.

During the year the N. & W. R. R. completed the construction of a water plant built exclusively for its own use, and by June had practically discontinued the supply from the Bluefield Water Works and Improvement Company. About 15% of the total revenue for the year was derived from the N. & W. R. R. and 85% from domestic consumption.

Taxes and Philadelphia rent and salaries charged against Bluefield have been pro rated.

No dividend was declared for the year 1904.

Date.	Amount.	Acct.	Description.
1/31.	$16.50	S	Service construction labor.
	3.30	S	" "
2/29.	41.00	S	" "
	12.28	S	" "
3/31.	22.95	S	" "
	66.73		Supplies.
4/30.	.25	S	Service construction.
	83.90	S	" "
	126.20	S	" "
	655.05	S	" "
	1,015.20	W	Impoving Ada Dam.
5/31.	77.28	S	Service construction.
	1,366.50	W	Improving Ada Dam.
6/30.	177.23	S	Service Construction.
	136.64	S	" "
	.25	S	" "
	6.51	S	" "
	178.51		Supplies.
	966.00	W	Improving Ada Dam.
7/31.	99.26	S	Service construction.
	924.45	W	Improving Ada Dam.
	6.67		Pipe line & service cnstruction.
8/31.	.25	S	Service construction.
	53.91	S	" " payroll.
	807.75	W	Improving Ada Dam, payroll.
	96.70	W	" " "

9/30.	32.75	S	Service construction.
10/31.	64.73	S	" "
11/30.	.50	S	" "
	58.12	S	" "
	35.25	S	" "
12/31.	26.00	S	" "
	3,662.85	S	Meter installation for year.
	276.10	S	Meters not installed.
	484.83		Plumbing materials on hand.
	182.12		Tools purchased.
	$11,764.52—Total.		

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1904—Income.

Date.	Amount.	Description.
1/31.	$552.68	N. & W. R. R. January consumption.
	726.82	Domestic Revenue collected in January.
	176.24	" " " by N. & W. Paymaster.
2/29.	264.34	Domestic revenue collected in February.
	1,027.32	N. & W. R. R. February consumption.
3/31.	75.50	Domestic revenue Company Houses 1st quarter.
	874.79	N. & W. March consumption.
	692.10	Domestic rrevenue collected in March.
4/30.	1,257.19	" " " " April.
	169.62	N. & W. R. R. April consumption.
	182.99	Domestic revenue collected by N. & W. paymaster.
5/31.	1,063.21	" " " in May.
6/30.	129.19	N. & W. May and June consumption.

1904—Plant Account.—*Continued.*

1904—Income.—*Continued.*

Date.	Amount.	Description.
	72.36	Domestic revenue company houses, 2nd quarter.
	868.56	" " collected in June.
7/31.	1,661.21	" " " " July.
	188.24	" " " by N. & W. paymaster.
	78.51	N. & W. stockyard consumption, 2nd quarter.
8/31.	1,130.12	Domestic revenue collected in August.
9/30.	98.96	Revenue collected from N. & W. R. R.
	73.72	Domestic revenue company houses—3rd quarter.
	1,109.16	" " collected in September.
10/31.	1,586.93	" " " " October.
	199.49	" " " by N. & W. paymaster.
11/30.	822.18	" " " in November.
12/31.	74.00	" " Company Houses—4th quarter.
	1,026.75	" " collected in December.
	3,000.49	" " to 12/31 uncollected.
	$19,182.67—Total.	

1904—Operation.

1/31.	329.65	Pumping, Inspection & labor.
	.20	Water Analysis.
	1.51	Freight.
	173.76	" on coal.
	123.19	Supplies and labor.

	78.66	Hauling Coal.
	338.45	Coal.
	8.81	N. & W. Commission on water rents.
2/29.	340.02	Pumping, labor, hauling & inspection.
	14.50	Stationery.
	138.34	Freight on coal.
	.75	" " "
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	$53.75	Traveling expense W. B. Stockton.
	58.10	Supplies.
	36.25	Hauling Coal.
	246.81	" "
	2.18	Supplies.
3/31.	296.04	Pumping and labor.
	60.00	Inspection.
	10.00	Water Anaylsis.
	249.76	Coal, freight & labor.
	40.65	Supplies.
	27.88	"
4/30.	8.15	Labor.
	58.58	Freight on coal.
	264.59	Pumping, Labor, Inspection & Hauling Coal.
	169.49	Coal and labor.
	51.81	Coal.
	9.15	Commission on water rents.
5/31.	60.00	Inspection.
	51.62	Pumping.
	33.70	Labor & supplies.
	152.33	Payroll—Labor.
	78.94	Coal and labor.

1904—Plant Account.—*Continued.*

1904—Operation.—*Continued.*

Date.	Amount.	Description.
	137.65	Supplies.
	101.90	Coal.
	172.23	Supplies.
6/30.	332.33	Pumping, Labor & Inspection.
	141.75	Coal.
	185.69	Supplies.
	1.02	"
	198.60	"
7/31.	10.23	"
	304.12	Pumping, Labor and inspection.
	274.76	Coal & labor.
	27.58	Hauling coal.
	9.41	Commission on water rents.
8/31.	12.74	Coal and labor.
	303.52	Pumping, labor and inspection.
	328.05	Coal, labor and supplies.
9/30.	477.12	Pumping, labor and inspection.
	5.65	Supplies.
	395.13	Coal and labor.
10/31.	8.27	Supplies.
	389.33	Pumping, labor & inspection.
	448.50	Coal, hauling and supplies.
	9.97	Commission on water rents.
11/30.	10.00	Water Analysis.
	18.68	" "

	$200.00	Insurance on Boilers.
	789.06	Coal and labor.
	379.80	Pumping, labor & inspection.
12/31.	4.52	Supplies.
	335.03	Pumping, labor and inspection.
	513.36	Coal, hauling & supplies.
	125.05	Horse feed for year.
	1,000.00	⅔ W. McCarthy salary for year.
	800.00	⅔ H. H. Kennedy " " "
	$12,018.67	
	620.00	Pro Rata Philadelphia Salary and Rent Charged to Bluefield.
	1,325.00	Pro Rata Taxes Based on 1905.
	$13,963.67	

940 Résumé of Plant Account, Income, and Operation for 1904.

Cost of Plant and Property incurred prior to 1904...		$137,454.24
" " " " " " during year....		11,764.52
Total Cost of Plant and Property at end of Year		$149,218.76
Income from service during year		$19,182.67
Expenditure for operation during year..	$13,963.67	
" " maintenance " " ..	0.00	
Total Expenditure for Operation and Maintenance During Year		13,963.67
Net Return Applicable to Depreciation, Interest and Dividends for Year		$5,219.00

Résumé of Interest and Dividends for 1904.

Pro Rata Interest paid on loans from Stockholders....	$2,200.00
" " Dividends for year	0.00
" " Amount Withdrawn for Interest and Dividends in 1904	$2,200.00

941 1905.

In 1905, aside from the usual additions to the distribution system, the water supply was enlarged by the purchase of Jarrell Spring No. 18 and of the Thompson Spring No. 20.

Only 3½ of the total revenue for the year came from the N. & W. R. R.

Philadelphia rent and salaries charged against Bluefield have been pro rated, as has the interest on loans made by the stockholders and by J. M. Wirgman.

No dividend was declared in 1905.

Date.	Amount.	Acct.	Description.
1/31.	$3.23		Pipe line & service construction.
	1.21		Payroll.
2/28.	.61		Pipe line supplies.
	11.04		Pipe line and service construction.
3/11.	4.22		Supplies.
3/31.	18.75	P	Pipe line supplies.
	22.75		Pipe line—Service Construction.
4/30.	.95		Supplies.
	12.30		"
	2.89		"
	37.75		Labor.
5/31.	7.54		Sundries.
	27.44		"
	307.35		Payroll.
	15.43		Sundries.
6/30.	4.00		"
	54.59		"
	176.05		Labor.
	844.85		Pipe line.
7/31.	100.00	W	Option on Jarrell Spring #19.
	33.51		Labor.
8/31.	1.04		Sundries.
	.25		"
	55.85		Labor.
	337.49		Supplies.

1905—Plant Account.—*Continued.*

Date.	Amount.	Acct.	Description.
9/30.	28.68		Sundries.
	29.00		"
10/31.	24.77		"
	1.90		Supplies.
	100.00	W	Thompson Spring No. 20
	73.62		Labor.
	62.09		Material & Supplies.
11/25.	1,900.00		Jarrell Spring #19.
11/30.	38.70		Miller Supply Co. supplies.
	148.20		Labor.
	6.90		Supplies.
12/31.	1.40		"
	12.15		Labor.
	503.03		Supplies.
	326.30		Office furniture.
	213.00		Surveying instruments.
	5.38		Meter installation.
	246.43		Tools purchased.
	$5,802.64		Total.

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1905—*Plant* Account.

Date.	Amount.	Description.
1/31.	$270.27	Domestic revenue collected in January.
	207.74	" " " by N. & W. paymaster.
2/28.	286.51	" " " in February.

3/31.	69.61	" " company houses—1st quarter.
	792.11	" " collection in March.
	128.67	N. & W. R. R. consumption—1st quarter.
4/30.	1,264.27	Domestic revenue collected in April.
5/31.	216.36	" " " by N. & W. paymaster.
	1,068.19	" " " in May.
6/30.	1,379.05	" " " " June.
	129.42	N. & W. R. R. Consumption 2nd quarter.
7/ 1.	65.25	Domestic revenue Company Houses 2nd Quarter.
7/31.	1,770.05	" " collected in July.
8/31.	1,512.91	" " " August.
	216.73	" " by N. & W. paymaster.
9/30.	61.22	" " Company houses 3rd quarter.
	1,076.97	" " collected in September.
	183.63	N. & W. R. R. consumption—3rd quarter.
10/31.	2,104.71	Domestic revenue collected in October.
11/30.	215.23	" " " by N. & W. paymaster.
	1,367.95	" " " in November.
12/31.	991.99	" " " " December.
	55.75	" " company houses—4th quarter.
	225.80	N. & W. R. R. consumption—4th quarter.
	3,444.76	Domestic revenue to 12/31 uncollected.
	$19,105.15—Total.	

1905—Operation.

$360.00	Pipe line inspection.
2,980.16	Coal and freight.
1,200.00	Engineers and firemen.

1905—Plant Account.—*Continued.*

1905—Operation.—*Continued.*

Date.	Amount.	Description.
	75.39	Beaver Pond—Pumper's wages.
	298.87	" " coal, freight & hauling.
	301.79	Office Expense.
	34.90	Traveling Expense.
	1,357.84	Taxes.
	1,000.00	" salary W. McCarthy for year.
	800.00	" H. H. Kennedy " "
	210.00	
	$8,618.95	Pro Rata Philadelphia salary and rent charged to Bluefield.
	735.00	
	$9,353.95—Total.	
944		1905—Maintenance.
	$271.64	Pipe line material and labor.
	801.37	" " labor.
	247.28	Materials—Ada.
	775.68	Labor.
	25.98	Beaver Pond—Material.
	65.40	" " Labor.
	10.29	Meters—material and labor.
	27.10	Shop expense.
	$2,224.74—Total.	

Résumé of Plant Account, Income, and Operation for 1905.

Cost of Plant and Property incurred prior to 1905....		$149,218.76
" " " " " " during year		5,802.64
Total Cost of Plant and Property at end of Year.		$155,021.40
Income from service during year.....		19,105.15
Expenditure for operation during year....	$9,353.95	
" " maintenance " "	2,224.74	
Total Expenditure for Operation and Maintenance During Year.....		11,578.69
Net Return Applicable to Depreciation, Interest and Dividends for Year		$7,526.46

Résumé of Interest and Dividends for 1905.

Pro Rata Interest Paid on Loans from Stockholders...	$2,180.00
" " Dividends for Year.....	0.00
" " Amount Withdrawn for Interest and Dividends in 1905.....	$2,180.00

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1906.

In 1906 some work was done in the laying of mains and installation of services and meters, but the bulk of the money expended for plant betterment was in connection with the New Ada Station, Ada Spring and the Twin Tanks. The old Ada Station building was torn down and the present station erected in its place. The old boilers were dismantled and removed and the present Stirling water tube boilers installed. The original Worthington pump was overhauled and reset and the present 1½ M. G. D. Snow pump erected. The above work as well as that in connection with the Twin tanks and Ada Spring was not completed until in 1907. Additional land for Spring No. 6 was purchased in 1906.

About 3¾% of the total revenue for the year came from the N. & W. R. R.

Philadelphia office rent and salaries charged against Bluefield as well as the interest on loans from stockholders and J. M. Wirgman, have been pro rated.

No dividend was declared in 1906.

Date.	Amount.	Acct.	Description.
1/31.	$4.78	S	New taps.
2/28.	3.78	S	Supplies for new taps.
	24.13	S	" " " "
	106.80	P	" " " mains.
	18.54	P	Labor for new mains.
	28.00	S	" " " taps.
	1.00	R	Jarrell Spring Right of Way.
3/31.	36.90	S	New taps.
4/30.	32.52	S	" "
	9.45	S	" " labor.
5/31.	93.40	S	" " "
6/30.	18.72	P	" mains.
	.72	S	" taps.
	79.18		Sundries.
	141.50	P	New mains.
	68.96	S	" taps.
7/31.	43.60	S	" "
	16.00	P	" mains.
8/31.	7.55	P	" "
	97.60	S	" taps.
9/30.	7.00	P	Pipe line Gravity Springs.
	552.11		Supplies.
	35.68	P	New mains—Labor.
10/31.	1.55	S	New taps.
	200.00	R	C. A. Bailey, Additional Land Spring #6.
	72.36	S	New taps.
11/30.	65.85	P	New mains.

12/31.	56.90	S	Making taps.
	15.20	S	" "
	78.91	S	" "
	370.82		Supplies.
	134.49		"
	$2,423.93—Total.		

Ada Station.

Date.	Amount.	Description.
6/30.	$198.80	Sand, cement & miscellaneous material.
	654.24	Labor.
7/31.	746.58	Materials.
	1,021.28	Labor.
	18.00	Materials.
	23.90	W. McCarthy.
8/31.	30.65	H. H. Kennedy.
	196.94	W. McCarthy.
	1,257.66	Materials.
	1,902.82	Labor.
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9/30.	$1,664.33	Materials, sand, cement, freight.
	69.35	Materials.
	600.00	Lumber.
	1,614.77	Labor.
10/31.	205.20	150 bbl. cement.
	325.00	C. H. Wheeler, 2 feed water heaters.
	727.08	Supplies.

1906—Plant Account.—*Continued.*

1906—Alda Station.—*Continued.*

Date.	Amount.	Description.
	1,260.38	Labor.
11/30.	1,060.74	Materials.
	1,624.57	Labor.
12/31.	660.31	Supplies.
12/31.	1,600.00	Stirling Boiler Co.
	7,500.00	Snow Pump Co.
	1,234.00	Virginia Boiler & Iron Co.
	1,525.70	Labor.
	25.00	Stirling Boiler Co.
	365.47	Freight.
	280.20	Materials.
	450.00	"
	14.00	Miller Supply Co.
	$29,010.97	
	297.16	Deduct cash freight Corr.-Ga. Lumber Co.
	$28,713.81—**Total.**	

Twin Tanks.

2/28.	14.36	Digging test hole.
6/30.	26.60	Materials.
	1,042.01	Labor.
7/31.	51.08	Grading.

	825.85	" payroll.
	1.40	"
8/31.	1.85	H. H. Kennedy.
9/30.	480.95	Materials, cement, etc.
	432.07	Labor.
10/31.	467.28	"
	31.25	Gravel.
11/30.	1.00	H. H. Kennedy.
	368.32	Materials.
	806.49	"
	11.08	Gravel and freight.
12/31.	92.18	Materials.
	1,187.21	Labor.
	18.51	Freight on sand.
	96.59	Materials.
	$5,956.08—Total.	

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Summary.

$2,423.93	General Plant Account.
28,713.81	Ada Station.
5,956.08	Twin Tanks.
$39,093.82	
100.00	Concrete Block Machine.
$39,193.82	Total.

1906—Plant Account.—*Continued.*

1906—Income.

Date.	Amount.	Description.
1/31.	$281.39	Domestic revenue collected in January.
2/28.	211.85	" " " by N. & W. paymaster.
	238.70	" " " in February.
3/31.	541.97	" " " " March.
	219.12	N. & W. R. R. consumption—1st quarter.
	35.55	Domestic revenue Company Houses—1st quarter.
4/30.	1,330.25	" " collected in April.
5/31.	1,217.35	" " " " May.
	223.10	" " " by N. & W. paymaster.
6/30.	1,200.06	" " " in June.
	233.50	N. & W. R. R. consumption—2nd Quarter.
	2.25	Domestic revenue Company Houses—2nd quarter.
7/30.	1,965.67	" " collected in July.
8/31.	1,427.18	" " " " August.
	222.72	" " " by N. & W. paymaster.
9/30.	312.66	N. & W. consumption—3rd quarter.
	1,696.50	Domestic revenue collected in September.
	2.25	" " Company Houses—3rd quarter.
10/31.	1,619.11	" " collected in October.
11/30.	2,378.91	" " " " November.
	221.76	" " " by N. & W. paymaster.
12/31.	2.25	" " Company Houses—4th quarter.
	1,804.60	" " collected in December.

137.78	N. & W. R. R. consumption—4th quarter.
6,015.71	Domestic revenue to 12/31 Uncollected.
$23,542.19	
235.65	Deduct for Adjustments.
$23,306.54	Total (Includes $667.50 hydrant rental per advice of W. McCarthy).

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1906—Operation.

Amount.	Description.
$360.00	Pipe line inspection.
2,007.13	Coal and freight at Ada.
1,028.83	Engineer and fireman at Ada.
115.28	Pumpers at Beaver Pond.
624.17	Coal, hauling & freight at Beaver Pond.
303.89	Office Expense.
1,163.80	State of W. Virginia pipe line Tax.
100.00	" " " " license tax.
1,000.00	2/3 W. McCarthy salary.
733.37	2/3 H. H. Kennedy salary Jan. to Nov. inclusive.
83.33	C. G. Bettelle salary for December.
52.50	1/2 M. M. Akers salary January to March inclusive.
49.26	1/2 A. E. F. " April to July inclusive.
100.00	1/2 Julia Dimond " Aug. to Dec. inclusive.
$7,721.56	
1,075.00	Pro rata Philadelphia salaries and rent charged to Bluefield.
$8,796.56	Total.

1906—Plant Account.—*Continued.*

1906—Maintenance.

Date.	Amount.	Description.
	260.30	Pipe line, materials & labor.
	1,565.80	" " labor.
	538.91	Materials at Ada.
	251.48	Labor at Ada Station and reservoir.
	333.54	Materials—Gravity Springs.
	929.20	Labor " "
	58.32	Material and labor—Storage ground.
	45.56	Beaver Pond material & supplies.
	47.11	" " —labor.
	$4,030.22	Total.

950 Résumé of Plant Account, Income, and Operation for 1906.

Cost of Plant and Property incurred prior to 1906....	$155,021.40
" " " " " " during year	39,193.82
Total Cost of Plant and Property at end of Year	$194,215.22
Income from service during year	$23,306.54
Expenditure for operation during year $8,796.56	
" " maintenance " " 4,030.22	
Total Expenditure for Operation and Maintenance during Year	12,826.78
Net Return Applicable to Depreciation Interest and Dividends	$10,479.76

Résumé of Interest and Dividends for 1906.

Pro Rata Interest Paid on Loands from Stockholders ...	$1,185.00
" " Dividends for Year	0.00
" " Amount Withdrawn for Interest and Dividends in 1906	$1,185.00

951 1907.

Aside from additions to the distribution system during the year 1907, including the installation of 22 fire hydrants, the new work on the Ada Station, Ada Spring and Twin Tanks was completed. The Ada Spring development consisted of excavating to shale within the depression into which the water emptied, and placing a concrete retaining wall with a spillway on the lower side. The space above the wall was filled to a depth of 5 feet with small rock under a foot of shale, which was covered with earth and sodded. On the cliff side of the basin another retaining wall was built in which was placed two pieces of 10" C. I. Pipe, so that during excess flow into the basin or filter bed, the excess water either flows over the spillway or passes out from a concrete cut-off wall at the spring through 3—12" vitrified tile pipe lines. The present head house was erected at this time, and is an elaborate octagonal building with a basin made of concrete, surmounted by a shingle roof supported on iron columns and enclosed with heavy wire netting. In October the Bailey Spring No. 22 was purchased. It was later developed and connected with the Ada Pumping Station by a 6" pipe line.

About 3.6% of the total revenue for the year came from the
952 N. & W. R. R., and 2¾% from the city for fire hydrant rental.

Philadelphia office rent and salaries charged against Bluefield as well as the interest on loans from stockholders and J. M. Wirgman have been pro rated.

No dividend was declared in 1907.

Date.	Amount.	Acct.	Description.
1/ 7.	$.25	B	J. F. Jewell, drayage on hardware for Ada.
1/26.	15.20	P	Bluefield Hardware Co.—2 pigs lead.
1/11.	10.80	B	Bluefield Hardware Co.—Nails & tar paper for Ada.
1/ 1.	1.26		Bluefield Hardware Co.—Tools.
6/ 4.	.69	W	George Lumber Co. 1 bag cement for Gravity Springs.
7/ 8.	32.00	B	Gibbony Sand Bar Co. 2 cars sand for Ada.
	2.92	S	Glaubar Brass Mfg. Co.—corporation cocks.
1/23.	1.96	B	Geo. P. Hall Co. 80 sash weights for Ada.
1/ 1.	2.85		W. H. Harry & Co.—dynamite.
	6.30	B	" " " " —supplies for Ada Station.
	4.63		" " " " —tools.
	50.00	B	Keeling & Sons, dressing lumber for Ada.
	60.90	B	N. & W. R. R. freight—3 carloads brick, 1 carload sand for Ada.
1/ 1.	446.24	B	Mingo Lime & Lumber Co., shingles, tile, etc., for Ada.
1/31.	1,572.00	B	Payroll—Ada Pumping Station.
	122.16	P	" —new mains.
	22.75	W	" —Gravity Springs.
1/26.	357.00	B	Richlands Brick Co.—51,000 brick for Ada.
1/31.	150.58	T	Payroll—Twin Tanks.
	16.59	T	Standard Fuel & Supply Co. Coal for tank work.
2/ 1.	2.15	B	Saxon Lime & Lumber Co.—Lumber for Ada Station.
	31.70	B	Superior Supply Co. Paint and tar paper—Ada.
	38.43	T	" " " pipe valves, etc.—tanks.
	75.00	M	N. & W. Wrecking Car for unloading Snow Pump.
	2.04		J. K. Tuggle tools.
	18.00	T	Virginia Brick & Iron Co. Allowance Demurrage.
1/22.	10.31	T	M. G. Whitlow, oil & red lead—tanks.

	267.78	P	Pipe and fittings, mains & services.
1/31.	7,020.85	T	W. B. Pollock Co. new tanks & chimney.
1/10.	94.00	B	Reading Hardware Co. hardware & millwork for Ada Station.
1/24.	1,600.00	M	Stirling Boiler Co. Boilers at Ada.
1/26.	1,234.00	B	Virginia Brick & Iron Co. steel—Ada Station.
2/12.	.92	B	Reading Hardware Co. rails.
2/22.	.87		N. & W. freight on tools.
2/ 1.	10.99		Bluefield Hardware Co. 2" pipe & dry red lead.
	10.87	B	Bluefield Hardware Co. nails, bolts, etc., for Ada Station.
	9.60		Bluefield Hardware Co. lead & fittings.
3/ 1.	13.00	T	T. H. Becker coal for tank work.
	312.63		Bertha Mineral Co.—lead.
	2.00	R	County Clerk—recording trust deed.
954			
	$2.00		Eureka Hardware Co. rubber hose.
2/20.	104.26	B	Georgia Lumber Co. lime & lumber for Ada Station.
3/ 1.	14.65	B	W. H. Harry Co. tools & hardware for Ada.
	.60	T	" " " hardware for tanks.
	.81	S	" " " " for meter installation.
2/20.	3.70	M	W. P. Hawley Co. leather & tools for Ada.
	42.25	B	G. O. Hall & Co. Millwork for Ada.
2/13.	22.50		Kelly & Jones Co. #4 stock.
2/28.	178.14		N. & W. freight on lead, pipe & cement.
	1,042.56	B	Payroll Ada Pumping Station.
	145.09	S	" making taps.
	80.69	T	" Twin tanks.
2/12.	76.70	M	Snow Steam Pump Co.
2/15.	12.05	B	Saxon Lime & Lumber Co.—Lumber for Ada.

Date.	Amount.	Acct.	Description.
2/16.	29.43	B	Superior Supply Co.—pipe, bolts, etc., Ada.
	6.00		" " " —ratchet.
	72.25	T	" " " —water and pump & steel tank.
	.60		" " " —supplies.
2/ 5.	1.20	B	M. G. Whitlow—galvanized iron for Ada.
	5.20	T	" " —lead for tanks.
2/28.	17.61	S	Materials for making taps.
3/ 9.	2.87	S	Southern Express Co. freight on meters.
3/13.	2.13	B	N. & W. freight Ada Pumping Station.
3/23.	1.95	S	Southern Express Co.—Freight on Meter.
3/26.	5.18	B	N. & W. freight Ada Pumping Station.
3/27.	82.25	B	Bluefield Hardware Co. Roofing for Ada Pumping Station.
	9.24		Bluefield Hardware Co. lead & fittings.
	31.50	T	" " " " & paint for tanks.
	26.79	P	" " " galvanized pipe mains.
	19.10		" " " tools.
	7.00	R	County Clerk—recording deeds.
3/22.	73.76	M	Chapman Valve Co. valve for Ada Pumping Station.
3/ 7.	39.55		Tools and supplies.
3/ 1.	73.80	T	Eddy Valve Co. 2—12" valves for tanks.
3/21.	49.50	T	Foster Engineering Co.—2" pressure regulator.
3/14.	22.87	B	Georgia Lumber Co. lumber & fire clay for Ada.
	75.00	M	Felix McCarthy 8" relief valve for Ada.
3/19.	84.60	S	H. Mueller Co. corporation cocks, etc.
955			
3/ 1.	$45.77		W. H. Harry & Co. hardware.

	2,665.25	P	Lynchburg Foundry Co. 2664'—10" pipe.
3/ 4.	35.00	S	Neptune Meter Co. 1½" meter.
4/ 3.	219.08	M	N. & W. frts. on pipe & material—Ada Station.
	42.00	T	" " " " for tanks.
3/31.	1,432.16	B	Payroll—Ada Pumping Station.
	49.32	S	" Making taps.
	619.82	T	" tanks.
3/12.	11.64	M	Saxon Lumber & Lime Co. lime & fire clay—Ada Station.
3/29.	83.82	T	Superior Supply Co. paint & hemp for tanks.
	131.98	M	" " " scale, st. trap, etc.—Ada Station.
	1.04	S	" " " material for new taps.
	4.74		" " " fittings, etc.
3/31.	277.35	T	Material and supplies for tanks.
	1,549.73	P	" " " mains & services.
3/38.	181.36	B	U. T. Hungerford Copper nails—Ada.
	4,150.85	T	W. B. Pollock Co. tanks and chimney.
	8,918.68	T	" " " " " "
4/11.	2.04		N. & W. freight on supplies.
4/ 2.	13.92	B	" " Ada Station.
4/ 4.	1.50	T	W. A. Robertson—Hauling new tanks.
4/ 6.	12.00	B	Southern Express Co. express—Ada.
4/12.	2.12	B	N. & W. freight new pumping station.
	2.63	T	" " tanks.
4/15.	3.33	B	" " Ada Station.
4/16.	.87		" " Supplies.
4/19.	1.00	B	Southern Express Co. express Ada Station.
4/23.	13.13	B	N. & W. freight " "
4/12.	6.00	R	County Clerk—recording deeds.
4/19.	10.65		Bluefield Hardware Co.—tools.
	4.91	T	" " " —paint, etc., new tanks.

1907—Plant Account.—*Continued.*

Date.	Amount.	Acct.	Description.
4/ 1.	46.88	B	T. H. Becker, coal Ada Station.
4/30.	84.00	M	Chapman Valve Co. valves—Ada Station.
4/20.	138.11	M	Eddy " " " " "
5/ 1.	16.00	B	Gibbonoy Sand Bar Co.—1 carload sand Ada Station.
3/30.	315.20	B	Georgia Lumber Co. cement—Ada Station.
	21.60	T	" " " sewer pipe for tanks.
3/29.	549.17	P	Lynchburg Foundry Co. pipe & specials.
	67.35	M	" " " " " " " —Ada.
4/17.	20.00	M	Lunkenheimer Co. 2" brass angle valve "
5/ 2.	111.70	B	N. & W. freight on sand, roofing, etc. Ada.
4/16.	219.08	B	Adjustment—Ada Station.
	42.00	T	" Tanks.
956			
4/ 1.	$72.34	M	Superior Supply Co. pipe, etc., Ada Station.
4/31.	63.02	S	Payroll—New taps.
	629.12		" New Pumping Station.
	780.44	T	" New tanks.
	57.56	W	" Gravity Springs.
4/ 3.	122.39	M	Superior Supply Co., packing, bolts, nails, etc.—Ada Station.
	504.98	T	" Supply Co. paint, bolts, pipe, etc. tanks.
	33.00		" Supply Co. tools—wheelbarrows.
	47.50	T	" " " 12" pipe for tanks.
4/30.	175.65	B	M. G. Whitlow—Tinning at Ada St.
3/29.	694.83	P	Lynchburg Foundry Co. 396'—10" pipe & Specials.
4/ 8.	115.23	M	Epping-Carpenter Co. Feed Pump—Ada.
4/18.	206.70	M	Harrison Boiler Co.—oil separator—Ada.

5/30.	51.50		Bluefield Hardware Co. Paper, graphite, etc.—Ada.
	21.03		" " " Fittings & rope.
	1.75		" " " Tools.
5/ 3.	11.89		N. & W. Freight material, new pumping station.
5/ 4.	3.55		Southern Exp. Co. Exp. material Ada Pumping Sta.
5/11.	3.05		N. & W. freight " " " "
5/15.	4.15		Southern Express Co. " " " "
	.50		Luther Ayres—hauling pipe.
5/23.	3.78		So. Exp. Co. exp. material Ada Pumping Station.
6/ 1.	511.32	M	Chapman Valve Co. valves, flanges, etc.—Ada.
5/24.	34.25	E	W. H. Ford Mapping pipe lines & taps.
5/ 1.	13.40	T	Georgia Lumber Co. cement & sewer pipe—Tanks.
	6.08	B	" " " sewer pipe—Ada.
5/ 6.	48.00	B	Gibboney Sand Bar Co. 3 carloads sand—Ada.
5/11.	60.17	B	N. & W. freight—3 carloads sand "
	105.68	P	" " on C. I. pipe.
	24.00	B	Sandusky Portland Cement Co.—waterproofing—Ada.
6/ 1.	3.55	B	W. H. Harry & Co. hardware.
	4.68		" tools.
	1.37	S	" hardware for meter installation.
5/27.	1,286.37		600'—8" & 1500'—6" pipe, Lynchburg Fdy. Co.
	554.41	M	Lynchburg Fdy. Co. pipe & specials—Ada.
5/ 3.	26.00	M	E. M. Nichols #2 steam trap "
5/31.	1,124.84		Payroll—Ada Pumping Station.
	183.30	T	" Tanks.
	231.01	P	" Mains.
5/ 2.	7.25	M	Queen & Co. vacuum gage—Ada.
5/31.	17.75	T	Superior Supply Co. pipe, fittings, etc.—Tanks.
	291.22	M	" " " " " " Ada.

1907—Plant Account.—*Continued.*

Date.	Amount.	Acct.	Description.
5/ 6.	3.02		M. G. Whitlow—hardware.
	1.26		" " tools.
4/30.	1,959.62	T	W. B. Pollock Co.—tanks & Chimney.
	1.88	M	U. T. Hungerford—brass goods—Ada.
957			
5/ 7.	$750.00	M	American Foundry & Construction Co.—pipe, valves & fittings—Ada.
6/ 1.	.70		Indian Orchard—telegram—Ada.
6/ 3.	17.07	M	Express & freight on castings, etc.—Ada.
5/ 3.	1.46	B	N. & W. freight on compound—Ada.
	5.01		Southern Express Co.—express on material—Ada.
	3.72	B	N. & W. freight on paint.
6/ 6.	102.21		Bluefield Hardware Co.—graphite & lead.
	5.50		" " " —tools.
5/29.	72.50	B	Camden Iron Works—circular stairway—Ada.
6/20.	1.14		Chapman Valve Co.—wheels.
6/21.	.50		Enterprise Co.—2 plugs.
6/25.	424.00	P	Eddy Valve Co.—16 fire hydrants.
6/ 6.	3.90		Georgia Lumber Co.—cement.
7/ 1.	7.15		W. H. Harry Co.—tools.
6/12.	569.10	P	Lynchburg Foundry Co. 1500'—4" pipe.
6/ 3.	33.80	M	National Meter Co. 1" meter—Ada.
5/ 7.	34.56	B	N. & W. R. R. freight on lumber.
6/ 8.	7.39	B	Pittsburgh Supply Co.—railing & fittings—Ada.
6/31.	1,449.40		Payroll—Pumping Station—Ada.
	378.43	P	" Mains.

6/28.	354.12	M	Superior Supply Co.—pipe, valves, fittings, etc.—Ada.
	24.20	S	" Supply Co.—supplies for meter.
	10.85		" " " —tools.
	3.36	P	" " " —hemp for mains.
6/ 5.	8.71	M	Saxon Lime & Lumber Co.—lumber for Ada.
6/ 6.	78.58	B	Wasworth, Howland & Co.—cement coating—Ada.
6/20.	1,950.00	T	W. B. Pollock Co.—tanks & chimney.
7/16.	.67		N. & W. freight on supplies.
7/ 5.	6.33		Bluefield Hardware Co.—tools.
	9.53		" " " —supplies.
6/29.	17.31	S	Glauber Brass Mfg. Co.—30 corporation cocks.
	12.96	B	Georgia Lumber Co.—sewer pipe & glass—Ada.
7/31.	21.55		W. H. Harry—hardware—Ada.
	9.65		" " —tools.
7/12.	236.87	S	Mueller Mfg. Co. curb cocks, boxes, etc.
7/29.	8.00	M	Miller Supply Co. Gaskets—Ada.
7/31.	47.67	P	N. & W. freight on 1500'—4" pipe & lead.
6/28.	308.79	P	National Lead Co—56 pigs lead.
7/31.	1,204.79		Payroll—Ada.
	513.52	P	" —Mains.
3/27.	2.70	B	Saxon Lime & Lumber Co. lime—Ada.
7/ 1.	83.23	M	Superior Supply Co.—gages, bolts, etc.—Ada.
	43.15	M	" " " —lubricators, etc.
7/30.	16.56	P	Thistle Foundry & Machine Co.—valves boxes.
9/23.	8.47	S	H. Mueller Co.
8/ 1.	.64	P	N. & W. freight on valve boxes.
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8/19.	$21.80	P	N. & W. freight on valves.
8/16.	1.25		Southern Express Co.—express.

1907—Plant Account.—*Continued.*

Date.	Amount.	Acct.	Description.
8/14.	3.26		N. & W. freights on supplies.
8/15.	72.53		Bluefield Hardware Co. pipe & fittings.
	2.25		" " " tools.
8/31.	1.50	R	Recording deeds.
8/ 5.	275.20	P	Eddy Valve Co. 6—3", 12—4", 4—6", 4 & 20" valves.
8/28.	16.00	B	Gibboney Sand Bar Co. 1 carload sand—Ada.
8/31.	1.55	S	W. H. Harry Co. Meter supplies.
	1.70		" Tools.
	.85		" Supplies—Ada.
8/13.	24.00	M	Harrison Safety Boiler Works—2 gages.
8/ 6.	82.08	P	Lynchburg Foundry Co.—specials.
8/ 6.	12.24		Miller Supply Co. 1 gate valve & bushings.
8/ 8.	50.03	S	Mueller Co.—service boxes.
8/31.	389.30		Payroll—new pumping station—Ada.
	839.56	P	" —mains.
	47.66	T	" —new tanks.
8/ 1.	45.57	M	Superior Supply Co. Oil filter & fittings—Ada.
	7.91		" " " " supplies.
8/ 7.	17.31	B	Saxon Lime & Lumber Co.—lumber—Ada.
	15.60	W	" " " " " —cement for Ada Spring.
8/10.	33.12	P	Thistle Foundry & Supply Co. 16 valves & boxes.
9/23.	1.63		Bluefield Hardware Co.—tools.
	34.32	B	" " " —paints, etc.—Ada.
	20.13		" " " —pipe & fittings.
9/13.	2.00	B	C. H. Luster—hauling cement—Ada.
9/28.	.50		J. C. Akers—hauling pipe.

9/23.	6.24	P	N. & W. freight on galvanized pipe.
	.25		Southern Express Co.—express.
	74.58	S	Cuyler & Mohler—1994'—½" galvanized pipe.
9/ 9.	61.20	B	Georgia Lumber Co. cement & lumber—Ada.
	26.62	W	" " " " " pipe—Gravity Sprgs.
10/ 1.	10.25	B	W. H. Harry Co.—Hardware—Ada.
	2.35		" —Tools.
	.40	S	" —Meter & supplies.
	.60	W	" —hardware for Gravity Springs.
9/30.	270.38	W	Payroll Gravity Springs.
	606.79		" Ada pumping station.
	122.25	P	" Mains & services.
9/12.	21.13		Superior Supply Co. Fittings, etc.
9/14.	17.15	B	Saxon Lime & Lumber Co.—lumber—Ada.
	3.70	B	M. G. Whitlow Co.—hardware—Ada.
	2.85		" —tools.
959			
10/31.	$11.63		Sundry Expanse.
10/ 3.	12.36		Bluefield Hardware Co.—tools.
	38.53	P	" " " —W. I. pipe mains.
	.51		" " " —Supplies.
	38.58	W	" " " —W. I. pipe—Bailey Spring.
	6.25	T	" " " —Graphite—tanks.
10/ 2.	15.50	W	Eddy Valve Co. 6" horizontal check valve for Bailey Spring.
10/ 4.	51.30		" Valve Co. 10" valve.
10/12.	80.70	W	Georgia Lumber Co. cement & Sewer pipe—Bailey Spring.
10/30.	4.29	B	Georgia Lumber Co. Glass for Ada Station.

1907—Plant Account.—*Continued.*

Date.	Amount.	Acct.	Description.
11/ 1.	2.75	W	W. H. Harry Co.—hardware—Bailey Spring.
	3.05		" " " " —tools.
	.31	S	" " " " —hardware for meters.
	1.51	P	" " " " " " laying mains.
3/29.	112.65	M	Lynchburg Foundry Co.—flanged pipe & fittings.
10/25.	42.99	M	" " " specials.
10/11.	120.70	R	May & Crockett—Abstract of title to Bailey Spring.
9/ 5.	4.92	M	N. & W. freight on pipe.
9/27.	16.50	B	" " " " " Sand—Ada.
10/31.	1,237.77	W	Payroll—E. Bailey Spring #22.
	191.89	P	" Mains & services.
10/12.	3.88		Superior Supply Co.—tools.
	440.74	W	" " " —699'—6" W. I. pipe & fitting—Bailey Spring.
10/19.	8.00	W	M. G. Whitlow—20 rods 48" wire fence.
11/13.	1.58		Bluefield Hardware Co.—tools.
12/ 1.	2.80		Sundry office expense.
11/27.	10.70		Cuyler & Mohler—fittings.
11/29.	20.80	W	Georgia Lumber Co.—cement Gravity Spring.
11/30.	2.60		W. H. Harry—tools.
9/31.	194.63	M	Magnesia Covering Co.—piping covering.
11/ 1.	3.72		H. Mueller Co.—supplies.
11/31.	137.06	P	Payroll—Mains & hydrants.
	70.08	S	" —Services.
	330.70	W	" —Estill Bailey Spring.
	34.80	W	" —Gravity Springs.
11/30.	3.74		Superior Supply Co.—tools.
	8.63		" " " —fittings, etc.

	4.80	P	" " " —hemp.
	22.35	B	" " " —supplies for Ada Station.
	2.65	B	W. Virginia Heating & Plumbing Co.—return bends.
960			
11/ 6.	$8.40		M. G. Whitlow,—tools.
10/31.	54.29		Saxon Lime & Lumber Co.—lumber.
12/28.	69.09		Georgia Lumber Co. 214—12" sewer pipe.
12/16.	22.05		James Hogan—Card Index Etc.
12/10.	5.25		Bluefield Hardware Co.—Tools.
12/31.	1,564.61	E	W. H. Ford—mapping pipe lines.
12/31.	4.47		W. B. Pollock Co.—chimney.
12/19.	168.00	S	Neptune Meter Co. 20—⅝" meters.
12/31.	16.25	S	Payroll—making taps.
	21.00	R	" Jarrell Spring Right of way.
1/29/08.	4,064.07	E	Frank C. Roberts—Architect's fees.
12/ 7.	2.24	M	Superior Supply Co.—Steam gage for Ada Pumping Station.
	.90		Superior Supply Co.—Tools.
	50.00	S	" " " —Meter Box covers.
12/31.	2.15		St. Clair & Goodson—tools.
8/23.	3,750.00	M	Snow Pump Co.—Ada Pump.
12/ 4.	500.00	T	W. B. Pollock Co.—tanks & chimney.
10/22.	1,500.00	R	Estill Bailey Spring #22.
12/ 4.	3,750.00	M	Snow Pump Co.—Ada Pump.
12/16.	71.00	M	N. & W. demurrage on Snow pump.
	$79,411.93		
	2,912.59		Deduct for material and labor sold to City, Companies and individends.
	$76,499.34		Total.

1907—Plant Account.—*Continued.*

1907—Income.

Date.	Amount.	Description.
1/31.	$217.84	Domestic revenue collected in January.
	230.86	" " " by N. & W. paymaster.
2/28.	328.03	Domestic revenue collected in February.
3/31.	583.53	" " " " March.
4/30.	174.43	N. & W. R. R. Consumption—1st quarter.
	1,778.74	Domestic revenue collected in April.
5/31.	258.01	" " " by N. & W. paymaster.
	2,102.11	" " " in May.
6/30.	176.48	N. & W. R. R. consumption—2nd quarter.
	1,819.78	Domestic revenue collected in June.
7/31.	6.75	" " Company Houses to 9/30.
961		
	$2,336.60	Domestic revenue collected in July.
8/31.	2,586.99	" " " " August.
	270.76	" " " by N. & W. paymaster.
9/30.	1,584.16	" " " in September.
	240.20	Revenue from City of Bluefield.
	195.00	Fire hydrants " " "
	412.23	N. & W. R. R. consumption—3rd quarter.
	2.25	Domestic revenue Company Houses—3rd quarter.
10/31.	2,814.11	" " collected in October.
11/30.	261.48	" " " by N. & W. paymaster.
	1,921.71	" " " in November.
12/31.	2,307.61	" " " " December.

	370.17	N. & W. R. R. consumption—4th quarter.
	8,445.43	Domestic revenue to 12/31 uncollected.
	$31,425.26	
	489.23	Deduct for Adjustments.
	$30,936.03	Total (Includes $850.00 hydrant rental per advice of W. McCarthy).

1907—Operation.

1/ 1.	.80	East River Electric Co.—light.
	4.95	Bluefield Book & Stationery Co.—supplies.
1/ 2.	7.00	Postmaster—Stamps & cards.
1/10.	3.00	" " " "
	1.50	J. S. Tade—horseshoeing.
1/29.	8.00	Postmaster—stamps.
1/ 1.	83.33	Salary—W. McCarthy.
1/ 4.	16.53	J. F. Bohanan—feed.
2/ 1.	2.90	Bluefield Book & Stationery Co.—supplies.
1/31.	20.00	Julia C. Dimond—Stenographer salary.
	68.99	Castner, Curran & Bullitt—1 carload coal.
	4.00	Daily Telegraph Subscription.
1/10.	9.15	James Hogan Ledger & book.
1/31.	31.50	W. McCarthy Expenses trip to Charleston.
2/ 1.	9.00	Bluefield Telephone Co.—telephone rental.
1/31.	83.33	W. McCarthy—Salary.
	60.00	Payroll—Inspection.
	100.00	" —Ada Pumpers.
	3.00	Susan Sanders—Office Janitress.
	11.54	N. & W. R. R. Commission on Water rents.

1907—Plant Account.—*Continued.*

1907—Operation.—*Continued.*

Date.	Amount.	Description.
2/ 1.	$.77	Bluestone Traction Co.—light.
2/ 8.	5.00	Postmaster—stamps.
2/13.	7.50	Bluefield Inn. W. H. Triol—Board.
2/22.	4.00	Postmaster—stamps.
3/ 1.	9.00	Bluefield Telephone Co.—telephone rent.
2/23.	6.55	Bluefield Stationery Co.—stationery.
2/28.	209.90	Castner, Curran & Bullitt—2 carloads coal.
	20.00	Julia Dimon, stenographer.
	83.33	W. McCarthy—salary.
	60.00	Payroll—Inspection.
	100.00	" —Pumpers.
	3.00	Susan Sanders—Office Janitress.
3 /1.	5.00	Postmaster—stamps.
	.44	Bluestone Traction Co.—light.
3/13.	2.00	Postmaster—stamps.
3/20.	16.00	Consumers Coal Co.—coal for office.
	3.00	Postmaster—stamps.
3/15.	200.00	Corbin & Goodrich—boiler insurance.
3/30.	266.28	Castner, Curran & Bullitt—3 carloads coal.
	20.00	Julia C. Dimond—stenographer.
3/ 5.	180.00	W. B. Gages Co. Audit.
3/31.	83.33	W. McCarthy—salary.
3/19.	4.10	Ott Engraving Co.—stationery.
3/31.	60.00	Payroll—inspection.
	100.00	" —pumping.

3/23.	100.00	State of W. Virginia license tax.
4/ 1.	10.40	Stovall, Phelps & Shirey—feed.
3/31.	3.00	Susan Sanders—Janitress.
4/10.	15.00	Booth, Garritt & Blair—Water Analysis.
	5.00	Postmaster—Stamps.
	.28	Bluestone Traction Co.—light.
4/17.	1.50	J. S. Tade—horseshoeing.
4/18.	10.50	Bluefield Inn—Mr. Triol's expenses.
4/23.	3.00	Postmaster—stamps.
4/13.	4.25	Consumers Coal Co.—coal for office.
4/30.	104.10	Castner, Curran & Bullitt—1 carload coal.
	40.00	Julia Dimond—salary.
4/ 1.	41.75	Daily Telegraph & Printing Co.—stationery.
5/ 1.	19.00	Bluefield Telegraph Co.—Telephone rental.
4/30.	83.33	W. McCarthy—salary.
4/31.	60.00	Payroll—inspection.
	107.39	" —pumping.
4/31.	3.00	Susan Sanders—Janitress.
4/ 6.	24.97	Standard Oil Co.—oil.
	7.14	Stovall, Phelps & Shirey—feed.

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4/30.	$3.00	Postmaster—Stamps.
5/ 1.	.22	Bluestone Traction Co.—light.
5/ 8.	5.00	Postmaster—stamps.
5/18.	6.00	" "
6/ 1.	6.55	Bluefield Book & Stationery Co.—stationery.
5/31.	275.70	Castner, Currant & Bullitt—3 carloads coal.
	40.00	Julia Dimond—stenographer.
6/ 1.	9.00	Bluefield Telephone Co.—telephone rent.

1907—Plant Account.—*Continued.*

1907—Operation.—*Continued.*

Date.	Amount.	Description.
5/31.	83.33	W. McCarthy—salary.
	60.00	Payroll—inspection.
	110.31	" —pumpers.
6/ 1.	14.67	Stovall, Phelps & Shirey—feed.
5/31.	3.00	Susan Sanders—Janitress.
6/ 1.	.25	Bluestone Traction Co.—light.
6/ 1.	10.00	City of Bluefield—License Tax.
6/ 4.	3.00	Postmaster—stamps.
6/ 6.	.95	Southern Express Co.—Express on Atlas.
6/10.	5.00	Postmaster—stamps.
6/17.	1.50	E. A. Surface—horseshoeing.
	1.00	White Pharmacy—stationery.
6/19.	5.00	Postmaster—stamps.
7/ 1.	30.80	T. H. Becker—coal for Beaver Pond pump.
	5.75	Bluefield Book & Stationery Co.—stationery.
6/31.	40.00	Mattie Cooley—stenographer.
6/29.	45.88	Castner, Curran & Bullitt—1 carload coal.
7/ 1.	52.25	Daily Telegraph, Printing Co.—printing & stationery.
6/31.	60.00	Payroll—inspection.
	164.77	" —pumpers.
	44.00	" —unloading coal.
6/20.	6.50	Standard Oil Co.—oil.
	83.33	W. H. McCarthy—salary.
6/31.	3.00	Susan Sanders—Janitress.
7/ 1.	5.00	Postmaster—stamps.

	.15	Bluestone Traction Co.—light.
7/15.	10.00	Postmaster—stamps.
7/ 1.	10.00	Peter Boyd—Advice on Ordinance.
7/31.	350.92	Castner, Currant & Bullitt, 4 carloads coal.
7/20.	21.26	N. L. Coiner—feed.
7/31.	40.00	Mattie Cooley—stenographer.
7/ 1.	2.75	James Hogan—letterheads.
7/31.	83.33	W. McCarthy—Supt. salary.
	9.00	Bluefield Telephone Co.—telephone.
	24.51	N. & W. freight on coal.
7/31.	60.00	Payroll—inspection.
	129.65	" —pumpers.
8/ 7.	11.72	Stovall, Phelps & Shirey—feed.
964		
7/20.	$55.70	Standard Oil Co.—oil.
7/31.	3.00	Susan Sanders—Janitress.
8/23.	.70	Southern Express Co.—express on sample of water.
8/ 1.	.15	Bluestone Traction Co.—light.
8/31.	10.00	Postmaster—stamps.
	.75	Hauling.
6/28.	1.50	E. A. Surface—horseshoeing.
8/27.	15.00	Booth, Garrett & Blair—water analysis.
9/ 9.	195.02	A. W. Bailey—hauling coal.
8/31.	3.22	Express, etc.
8/31.	297.86	Castner, Currant & Bullitt—5 carloads coal.
	40.00	Mattie Cooley—stenographer.
	83.33	W. McCarthy—salary.
9/11.	.89	Western Union Telegraph Co.

1907—Plant Account.—*Continued.*

1907—Operation.—*Continued.*

Date.	Amount.	Description.
9/11.	9.00	Bluefield Telephone Co.—telephone.
	1.25	Enterprise Co.
	2.50	Bluefield Book & Stationery Co.—stationery.
	2.95	E. Bond—office supplies.
8/31.	60.00	Payroll—inspection.
	114.00	" —pumpers.
	5.80	" —hauling coal.
9/12.	10.47	O. C. Phelps—Feed.
8/31.	3.00	Susan Sanders—Janitress.
8/21.	69.31	Standard Oil Co.—oil.
9/ 2.	1.15	Adams Express Co.—express on sample of water.
9/10.	8.15	Bluefield Book & Stationery Co.—books & stationery.
9/18.	15.00	Booth, Garrett & Blair—water analysis.
9/3.	8.00	Postmaster stamps.
9/11.	.43	Bluestone Traction Co.—light.
9/18.	.35	Southern Express Co.—express on photos.
9/27.	1.00	L. H. Fletcher—hauling oil.
9/30.	40.00	Mattie Cooley—stenographer.
	3.00	Susan Sanders—Janitress.
	514.79	Castner, Currant, & Bullitt—6 carloads coal.
	3.70	Sundry office expense.
10/ 1.	24.00	Daily Telegraph Printing Co.—Adds, Books, etc.
10/ 1.	.30	W. H. Harry—Hardware.
9/30.	83.33	W. H. McCarthy—Salary.
9/27.	17.00	J. H. Parsons Chemical Co. 100# purifier.

9/30.	209.96	Payroll pumpers.
	60.00	Payroll inspection.
9/26.	8.93	Standard Oil Co.—Gasoline.
7/ 5.	24.51	N. & W. freight on coal.
10/31.	13.41	Sundry office expense.
11/ 1.	10.45	Bluefield Book & Stationery Co.—office supplies.
11/ 1.	8.25	T. H. Becker—3 tons coal.
965		
4/ 5.	$23.50	City of Bluefield—hauling.
10/31.	189.60	Castner, Currant & Bullitt—3 carloads coal.
9/ 5.	2.00	N. & W. demurrage on coal.
10/31.	83.33	W. McCarthy—salary.
10/24.	126.00	A. W. Bailey—hauling coal—84 tons.
	3.00	N. & W. R. R. demurrage on coal.
10/31.	12.75	Bluefield Telephone Co.—telephone.
	3.50	" Directory Co.—director-.
	40.00	Blanch Nash—salary.
10/31.	60.00	Payroll—inspection.
	92.89	" —pumpers.
10/ 8.	18.66	Owen C. Phelps—feed.
10/21.	64.24	Standard Oil Co.—oil.
10/31.	7.35	Standard Fuel Supply Co.—coal.
	3.00	Susan Sanders—Janitress.
10/ 3.	3.00	M. G. Whitlow—oil & hardware.
11/20.	2.50	J. T. Akers—2 copies franchise ordinance.
11/ 1.	18.43	Sundry office expense.
11/27.	.40	James Hogan—rubber stamp.
12/12.	30.45	W. H. McCarthy Expense Philadelphia & return.
11/20.	127.96	A. W. Bailey—hauling.

1907—Plant Account.—*Continued.*

1907—Operation.—*Continued.*

Date.	Amount.	Description.
11/31.	83.33	W. McCarthy—salary.
	40.00	Blanch Nash—stenographer.
11/31.	60.00	Payroll inspection.
	216.55	Payroll—pumpers.
11/29.	44.67	Standard Oil Co.—oil.
11/29.	4.25	" Fuel & Supply Co.—coal.
11/30.	261.27	Castner, Curran and Bullitt—3 carloads coal.
11/31.	3.00	Susan Sanders—Janitress.
12/ 9.	5.00	Bluefield Stationery & Supply Co.—stationery.
12/ 9.	30.00	Booth, Garritt & Blair—water analysis.
12/31.	8.92	Sundry office supplies.
12/31.	101.16	Castner, Currant & Bullitt—1 carload coal.
	9.28	Sundry office expense.
	36.40	Daily Tel. Printing Co.—Adds. & stationery.
12/31.	83.33	W. McCarthy—salary.
	34.14	A. W. Bailey—hauling coal.
	1.25	Enterprise Co., supplies.
	2.65	W. H. Harry—material for meter installation.
	19.00	Bluefield Telephone Co.—telephone.
	2.65	W. G. Whitlow—tools & supplies.
	3.65	Express.
12/31.	40.00	Blanch Nash—salary.
	164.40	Payroll—pumpers & fireman.
	60.00	" —inspection.

12/31.	$4.25	Standard Fuel & Supply Co.
	9.59	St. Clair & Goodson Supplies.
12/ 3.	19.50	Stone Printing & Mfg. Co., 2 water registers.
12/31.	3.00	Susan Sanders—Janitress.
	7.76	Stone Printing & Mfg. Co.—stock for registers.
	1,174.76	State of W. Virginia—pipe line taxes.
12/31.	75.00	A. L. Rhoads—Salary.
	500.00	C. G. Bettelle—Salary January to June, inclusive.
	600.00	" " " July to December "
	$11,221.48	
	1,200.00	Pro Rata Philadelphia Salary and Rent Charged to Bluefield.
	$12,421.48	Total.

1907—Maintenance.

1/22.	$2.13	Bluefield Hardware Co.—1 ton dry red lead—tanks.
1/ 1.	1.12	W. H. Harry & Co.—Supplies.
1/31.	196.41	Payroll—pipe line.
2/ 1.	15.89	Superior Supply Co.—packing & fittings for pump.
	10.95	Fittings for pipe lines.
2/28.	167.05	Payroll—pipe line.
	23.45	" —Ada Station.
	5.00	Material for Maintenance on Mains.
3/ 5.	2.54	Leather gaskets for Ada Pump.
3/ 4.	14.20	Neptune Meter Co.—meter parts.
3/ 7	12.00	National " " " "

1907—Plant Account.—*Continued.*

1907—Maintenance.—*Continued.*

Date.	Amount.	Description.
3/31.	120.29	Payroll—maintenance on mains.
	24.50	" Ada Station.
	6.25	M. & S. pipe line—maintenance.
4/31.	114.61	Payroll—Maintenance on mains.
	28.35	" " at Ada Station.
4/ 3.	4.00	Superior Supply Co.—Bolts for Beaver Pond pump.
5/30.	.84	Bluefield Hardware Co.—copper rivets for Beaver Pond pump.
5/20.	.90	Southern Express Co.—express—repairs Beaver P.
5/30.	1.40	" " " " " " "
5/25.	1.00	Bluefield Meat Market—tallow.
5/18.	8.40	Charleston Metallic Packing Co.—rings for Beaver Pond pump.
967		
5/27.	$8.10	Crandall Packing Co.—spiral packing for Beaver Pond pump.
5/ 3.	4.79	Flat Top Grocery Co.—leather.
6/ 1.	.90	W. H. Harry & Co.—hardware Beaver Pond pump.
5/31.	209.71	Payroll—maintenance on mains.
	11.50	Superior Supply Co.—pipe fittings, etc. Beaver Pond pump.
6/ 6.	3.25	Bluefield Hardware Co.—hardware repairs Beaver Pond pump.
6/ 1.	28.60	Enterprise Co.—patterns repairs B. P. pump.
5/31.	13.31	Pipe line—maintenance.
6/31.	83.33	W. McCarthy—salary.
7/ 1.	9.00	Bluefield Telephone Co.—telephone.
6/24.	3.75	F. W. McBride—cleaning typewriter.
	9.42	E. Bond—office supplies.

6/31.	174.82	Payroll—Maintenance on mains.
	34.83	" " at Ada.
6/28.	53.00	Superior Supply Co.—supplies for Beaver Pond pump.
7/ 1.	2.00	G. R. Reese—hauling—gravity springs.
7/31.	3.80	Southern Express Co.—express on supplies.
7/13.	.65	Georgia Lumber Co.—cement for gravity springs.
7/31.	.30	W. H. Harry—hardware.
7/31.	235.77	Payroll—maintenance—mains.
	14.00	" " Ada Springs.
7/ 1.	.75	Superior Supply Co.—Supplies for B. P. pump.
8/31.	2.60	W. H. Harry Co. " " " "
	6.25	" supplies for maintenance on mains.
9/11.	1.38	Georgia Lumber Co.—glass.
8/31.	467.05	Payroll—pipe line maintenance.
	19.25	" Ada Station "
	92.83	" Beaver Pond station—maintenance.
9/21.	.35	D. R. Dooley—hauling pipe.
10/ 1.	1.60	W. H. Harry—hardware for P. L. maintenance.
	.65	" " " B. P. "
9/30.	810.34	Payroll—maintenance mains.
	131.82	" " at Ada.
9/ 9.	3.50	White Pharmacy.
10/31.	.50	Sundry Expense.
	7.47	Bluefield Hardware Co.—supplies B. P. pump.
10/24.	4.10	Georgia Lumber Co.—brick & lime B. P. pump.
10/31.	9.25	Maintenance—Ada Station.
10/31.	271.78	Payroll—maintenance on Mains.
	229.94	" " at Ada Station.
10/31.	24.33	" " " Ada Spring.

1907—Maintenance.—*Continued.*

Date.	Amount.	Description.
	12.00	" " Beaver Pond Station.
10/12.	$2.25	Superior Supply Co.—supplies Beaver Pond pump.
	27.98	" " " " Ada pump.
11/13.	.26	Bluefield Hardware Co.—maintenance supplies.
11/27.	6.60	W. H. Coffman Coke Co.—6 yds. crushed stone.
11/11.	15.60	Georgia Lumber Co.—cement.
11/30.	2.09	W. H. Harry Co.—hardware for Gravity springs.
11/31.	404.83	Payroll—maintenance mains.
	42.70	" " Ada Station.
	6.67	" " Beaver Pond pump.
11/31.	70.18	Superior Supply Co.—pipe fittings, etc.
12/31.	5.04	Sundry supplies for Ada Station.
	2.25	" " " gravity springs.
12/16.	6.60	W. H. Coffman Coke Co.—6 yds. stone, office repair.
12/28.	25.10	Georgia Lumber Co.—cement & lime for office repair.
12/14.	6.56	W. P. Harry Co.—ducking for Ada pump.
12/31.	225.46	Payroll—maintenance on mains.
	155.18	" " " tank.
	105.40	" repairs on office.
	40.00	" " at Beaver Pond.
	44.13	" " " Ada.
12/31.	3.15	St. Clair & Goodson—repair supplies for Beaver P.
	$4,961.78—Total.	

969 Résumé of Plant Account, Income, and Operation for 1907.

Cost of Plant and Property incurred prior to 1907....	$194,215.22
" " " " " " during year.....	76,499.34
Total Cost of Plant and Property incurred at end of year.....	$270,714.56
Income from service during year.....	$30,936.03
Expenditure for Operation During Year $12,421.48	
" " Maintenance " " 4,961.78	
Total Expenditure for Operation and Maintenance during Year.....	$17,383.26
Net Return Applicable to Depreciation, Interest and Dividends.....	$13,552.77

Résumé of Interest and Dividends for 1907.

Pro Rata Interest paid on Loans from Stockholders..	$760.00
" " Dividends for Year.....	0.00
" " Amount Withdrawn for Interest and Dividends in 1907.....	$760.00

970 1908.

On January 1 the water works business was separated from the land and house business, so that from this time up to the present, the Company books and records have to do with the water business only. The land and houses were turned over to Mr. J. M. Wirgman as trustee.

In connection with the installation of mains, services and meters, three fire hydrants were installed for which the city was charged. Some miscellaneous extra work was done on the Ada Pumping Station, Ada Spring and Dam, and on the Twin Tanks. In January the Henry Ruble farm consisting of 46½ acres was purchased. In May additional land was purchased from C. A. Baiely for Spring No. 6, and 1½ acres was purchased from Bailey and Lester for Springs Nos. 7 and 8. In June the land for Springs Nos. 9, 10 and 11 was purchased from Robt. W. Tuggle. All these springs were developed shortly after the purchase of the land in which they are located. The development consisted of cleaning, grubbing and fencing in the land; the laying of infiltration lines, and the building of concrete basins and frame head houses.

Spring No. 6 was overhauled and the 3″ line leading from the spring was replaced by a 6″ line. The 6″ gravity spring line that

had been laid parallel and between Bland and Wilson Sts.
971 to Adams St. was taken up, and the 10", Beaver Pond force main connected for use in handling the supply from the springs.

During the year an office vault was constructed in the office building.

From 1908 the consumption of the N. & W. R. R. amounts to practically nothing, the company serving the railroad only at such times as the plant of the latter is for any reason thrown out of operation. About 4¾% of the revenue for 1908 came from the city for fire hydrant rental.

A 4% dividend amounting to $10,080 was declared for the year 1908.

For the year 1908 and the years following, no pro rata division has been made, inasmuch as all records have to do strictly with the water works business.

Month.	Amount.	Acct.	Description.
Jan.	$1.64	S	N. & W.—freight on meters.
	1.25	R	County Clerk Recording deed.
	22.50	F	Bluefield Furniture Co.—Desk and Cuspidors.
	8.60		" Book and Stationery Co.—Books, Supplies, etc.
	34.75	F	" " & " Co.—Desk & book case.
	10.95	T	" Hardware Co.—Supplies, New Tanks.
	4.16		" " " —Tools.
	12.00		William Curry—1 Folio.
	37.31	L	Legal Expense in connection with Ruble purchase.
	349.62	R	H. C. Ruble—Ruble Farm 46½ acres.
	173.18	T	Payroll—New Tanks.
	2.10	S	" Meter installations.
	6.48	S	" Making Taps.
	10.67		Saxon Line & Lumber Co.—Dressing 6,100′ sheathing.
	1.50		Superior Supply Co.—Tools.
	228.60	T	" " " 70 squares roofing, etc. New Tanks.
Feb.	79.69	S	American Sewer Pipe Co.—18″ pipe and rings.
	1.00	F	Bluefield Hardware Co.—1 cash drawer.
	26.25	T	" " " —1 bbl. linseed oil.
	3.00	R	" " " —Lamp Block Ada St.
	.35	P	Hauling.
	1.70	S	South Express Co.—Express on meters.
	15.35	F	Bluefield Book & Stationery Co.—Copypress and sponge cups.
	1.25	R	County Clerk—Recording deed—Lester Land.
	9.15	M	Snow Pump Co.—Latch Spring Pins.
	4.40		Cuyler & Mohler—Tools.
	4.05	S	" " " —Wiping Solder.

1908—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
	1.69	S	W. H. Harry & Co.—Supplies for meter installation.
	8.33		" Tools.
	1.00		" Hardware Supplies.
	69.09	P	N. & W.—Freight on pipe.
	20.50	T	Payroll—New Tanks.
	29.75	P	" Laying Mains.
	28.35	B	" New Station.
	70.00	L	A. W. Reynolds—Examining titles and preparing deeds Bailey and Lester purchases.
	10.50		Superior Supply Co.—Tools.
	5.00	M	" " " —Pop valve.
	3.40	F	M. G. Whitlow—Sheet metal.
	.30		" Tools.
	1.84		" Sheet copper.
973			
Mar.	$2.00	S	T. T. French—Hauling T. C. Pipe.
	9.51	S	Freight on Service Supplies and meters—N. & W.
	.25	S	Hauling meters.
	5.00	T	Bluefield Hardware Co.—Nails, Etc. New Tanks.
	.92		" " " —Tools.
	24.42	S	Cuyler & Mohler—Lead pipe.
	16.72	T	Georgia Lumber Co.—Lumber for new tanks.
	5.90	T	W. H. Harry Co.—Paint, Nails, Etc. new tanks.
	2,132.54	P	Lynchburg Foundry Co.—6,000'—6" pipe.
	289.03	P	N. & W.—Freight on 8,700'—6" pipe.
	216.30	S	Neptune Meter Co.—25⅝" meters.

	260.64	T	Payroll—new tanks.
	40.28	P	" laying mains.
	119.61	B	" New pumping station.
	28.70	S	" Meter installations.
	75.00	F	Walter Ryan Co.—Vault Front.
	4.79	T	Saxon Lime & Lumber Co.—Dressing Lumber.
	4.59	T	Superior Supply Co.—Log screws for new tanks.
	50.00	S	" " " 25 meter boxes.
Apr.	27.15	P	N. & W.—Freight on 31 valves.
	.50	P	Enterprise Co.—2 plugs.
	4.75	P	H. B. Doyle—Hauling.
	29.15		Bluefield Hardware Co.—Tools.
	34.50	P	" " " 575# Lead.
	8.54	W	" " " Explosives & Roofing—Gravel Springs.
	6.25	F	Coffman Coke Co.—5 yds. stone for vault.
	321.50	P	Eddy Valve Co.—20—4"; 6—6", 3—8", 2—10" valves.
	14.45	W	Georgia Lumber Co.—Cement and lime—Gravel Spgs.
	6.37	W	W. H. Harry Co.—Supplies Gravel Springs.
	9.62		" Tools.
	11.50	E	W. H. Ford—Mapping services and hydrants.
	.55	S	W. H. Harry Co.—Supplies Meter installation.
	2.79	T	" " new tanks.
	1.64	P	" " laying mains.
	245.00	P	Leadite Co. of America, 2450# lead.
	1,329.38	P	Lynchburg Foundry Co.—3,000'—6" pipe & specials.
	.68	S	N. & W.—freight on plumbing material.
	18.20	P	" " " pipe.
	1.04	S	" " " "
	9.56	S	H. Mueller Co.—Service Supplies.

1908—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
	943.09	P	Payroll—Laying Mains.
	1,306.95	W	" —Gravity Springs.
	70.88	T	" —New Tanks.
	42.63	S	" —Meter Installations.
974			
Apr.	$7.50	F	S. M. Smith—Enamel Paint for Vault.
	22.14	W	Saxon Lime and Lumber Co.—246'—6" sewer pipe-Springs.
	14.40	T	Superior Supply Co.—Supplies for new tanks.
	15.85		" " " —Tools.
	51.80	S	" " " —Meter Boxes.
	129.66	P	" " " —Lead and fittings.
	5.75		M. G. Whitlow—Tools.
May	.75	F	Hauling cement for new vault.
	1.00	S	N. & W.—freight on meter.
	.75	F	F. M. Hedrick—Hauling Lumber for new vault.
	1.10	F	South Express Co.—Express on office vault supplies.
	6.00	F	J. L. Peters—Hauling Brick for Vault.
	5.85	P	N. & W.—freight on pipe.
	.25	W	B. Turner—Hauling Lumber Gravel Springs.
	1.40		Bluefield Hardware Co.—Tools.
	.70	W	" " " —Bolts for Gravel Sprgs.
	14.92	P	" " " —215'—1" galv. pipe.
	15.25	F	Crosby Co.—2 H. P. gages for office.
	3.00	F	Coffman Cocke Co.—3 yds. rock for vault.
	104.70	W	Georgia Lumber Co., lime, cement, & pipe, Grav. spgs.
	25.48	F	" " " " " for office vault.

	5.55	W	W. H. Harry Co.—Supplies for Gravel Springs.
	1.55		" Tools.
	.55	S	" Supplies for meter inst.
	80.28	P	Lynchburg Foundry Co.—Specials.
	15.90	S	Markel Bros.—36 Stop cocks.
	1.88	S	W. T. Hungerford—brass goods.
	241.43	P	Payroll—Taking up pipe.
	943.87	P	" Laying mains.
	623.53	W	" Gravity Springs.
	48.30	S	" Meter installation.
	33.07	F	" Office Vault.
	59.74	B	" New Station.
	299.40	S	Pittsburgh Meter Co.—36—⅝" meters.
	31.30	W	Saxon Lime & Lbr. Co.—Lime, cement Gravel Springs.
	1.30	F	" " " " " " new vault.
	40.12	P	Superior Supply Co.—Lead.
	6.44		" " " Fittings, Etc.
	1.71		" " " Tools.
June	.50		Enterprise Co.—1 plug.
	9.39	P	Lead.
	1.25		Hauling cement.
	6.25	E	W. H. Ford—Platting in pipe atlas.
	2.25	S	N. & W. Freight on meters.
975			
June	$6.25	R	County Clerk Recording Deeds—Gravity Springs.
	49.96	W	Bluefield Hardware Co.—Explosives " "
	7.71		" " " —Tools.
	34.50	S	Crane Hawley & Co.—Lead Pipe.
	67.50	P	Eddy Valve Co.—6—6" valves.

1908—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
	309.04	W	Georgia Lumber Co.—Lumber and sewer pipe for Gravity Springs.
	2.75		W. H. Harry Co.—Tools.
	20.26	W	" " " Supplies for Gravity Springs.
	590.20	P	Lynchburg Foundry Co.—2,400'—4" pipe.
	50.97	P	N. & W.—freight on pipe.
	67.85	S	Markel Bros.—Corporation cocks.
	426.57	P	Payroll—Laying mains.
	1,863.81	W	" Gravity Springs.
	41.50	S	" Meter Installations.
	1.35		Superior Supply Co.—Fittings.
	8.64	W	" " " —Supplies for Grav. Spgs.
July	.60		F. W. Helvey—Tools.
	2.52	S	N. & W.—freight on lead pipe.
	7.27	P	" " " " " cocks and valves.
	15.20	W	Bluefield Hardware Co.—Explosives and pipe.
	91.26	P	" " " Lead.
	3.97		" " " Galvanized pipe.
	6.00	W	C. P. Claytor, Services and medicine for cattle.
	3.50	P	Enterprise Co.—Pipe plugs.
	126.18	W	Ga. Lbr. Co.—cement, sewer pipe and lumber Gravity Springs.
	2.70		W. H. Harry & Co.—Tools.
	3.38	W	" " " " " Supplies for Gravity Springs.
	698.05	P	Lynchburg Foundry Co.—1,500'—4", 960'—6" pipe.
	63.11	P	N. & W.—Freight on pipe.
	1.00	S	" " " " " meters.
	.39	P	" " " " " valve boxes.

	100.00	W	C. A. Bailey—Damage to stock from leadite.
	40.00	W	Bowen Ness " " " " "
	3.50	S	Payroll—Meter installation.
	6.75	S	" Making taps.
	676.78	P	" Laying mains.
	781.26	W	" Gravity Springs.
	11.55	W	Ex—Labor " "
	26.18	W	Superior Sup. Co.—Bolts, steel, pipe, etc.
	31.12		" " " Tools.
	51.59	S	" " " Meter covers.
	13.56	P	" " " Hemp, lead, etc.
	8.40	P	Thistle Foundry & Machinery Co.—Valve Boxes.
976			
Aug.	$18.75	F	Bluefield Furniture Co.—Desk and Mirror.
	.25	P	N. & W.—Freight on Valve boxes and covers.
	4.25	S	" " " " " meters.
	1.77	S	" " " " " corporation cocks.
	.35	S	C. D. Honaker—Hauling meters.
	10.08	P	Bluefield Hardware Co.—Lead.
	2.57	W	" " " Hinges, etc. Grav. Spgs.
	2.65		" " " Tools.
	45.75	W	Ga. Lbr. Co.—Lbr., sewer pipe, cement, etc.
	4.88	F	" " " Glass.
	.50	S	" " " Cement for meter installation.
	8.67	S	" " " Lumber Estill Bailey Spring.
	29.66	W	W. H. Harry & Co.—Supplies Gravity Springs.
	1.83	P	" " " " " " for laying mains.
	.50	S	" " " " " " " meter installation.
	2.75	E	W. H. Ford—Platting in pipe atlas.

1908—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
	5.20		W. H. Harry & Co.—Tools.
	1.60		" " " " " Supplies.
	31.00	B	Intermont Electric Co.—Wiring office.
	1,550.20	P	Lynchburg Foundry Co.—1,800'—6", 3,852'—4" pipe.
	54.94	S	Markel Bros.—Corporation Cocks and fittings.
	62.05	S	H. Mueller Co. " " " "
	11.55	E	Williams, Brown & Earl—Tracing paper.
	2.45		Supplies.
	138.31	P	N. & W.—Freight on 3 car loads pipe.
	484.28	P	Payroll—laying mains.
	350.36	W	" Gravity Springs.
	504.00	S	Pittsburgh Meter Co.—60—⅝" meters.
	93.93	P	Superior Supply Co.—Lead.
	34.05		" " " —Tools.
	4.63	W	" " " —Supplies Gravity Springs.
	1.42	S	" " " " meter installation.
	3.96		" " " —Fittings, etc.
	16.50	P	Thistle Foundry & Machinery Co.—Valve boxes.
Sept.	3.42		Bluefield Hardware Co.—Tools.
	160.00	R	W. T. Bailey—800 posts gravity springs.
	.50	S	Ga. Lbr. Co.—Cement for meter installation.
	.60	S	W. H. Harry & Co.—Supplies for meter "
	4.50	F	" " " " " Oil Heater.
	3.00	E	W. H. Ford—Mapping in pipe atlas.
	24.85	P	Lynchburg Foundry Co.—Specials.
	2.00	W	G. & R. Tuggle—Spring Options.
	8.00	W	W. McCarthy—Expert looking over water supply.

	89.08	P	Payroll—laying mains.
	14.60	S	" Making taps.
	62.73	S	" Meter installations.
	254.50	W	" Gravity Springs.
977			
Sept.	$80.73	S	Superior Supply Co.—Meter tops and rings.
	8.40	P	" " " Lead.
	4.00		" " " Tools.
	3.80	S	" " " Supplies for meter inst.
	90.76	E	Whitall Tatum Co.—Laboratory Equipment.
	1.83	P	N. & W.—Freight on pipe.
	.25	P	Geo. Yopp—Hauling pipe.
	.35	S	C. S. Duncan— " meter boxes.
	.50	S	Fred Sarh— " " taps.
Oct.	95.55	S	American Sewer Pipe Co.—180 pieces 18" pipe.
	15.00		" Ldy. Mchy. Mfg. Co.—Gas Generator.
	1.75		Bluefield Hardware Co.—Tools.
	43.62	P	" " " Lead.
	6.00	F	" Furniture Co.—Chair.
	163.20	S	Buffalo Meter Co.—24—⅝" meters.
	5.33		Divine Water Motor Co.—Motor.
	2.20		W. H. Harry Co.—Tools.
	2.46		" —Supplies.
	17.93	S	H. Mueller Co.—Service Clamps, etc.
	6.13	W	N. & W. R. R.—Screen for Gravity Springs.
	267.33	P	Payroll—Laying mains.
	32.50	S	" Meter Installations.
	162.30	W	" Gravity Springs.
	15.00	R	A. W. Reynolds—Examining Title Bailey Land.

1908—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
	3.35	S	Superior Supply Co.—Cement for meter inst.
	75.30	P	" " " —Lead, hemp and galv. pipe.
	72.24	S	" " " —Meter tops and rings.
	15.90		" " " —Tools.
	64.79	T	" " " —Pipes, fittings for tank overflow.
	3.40	F	White Pharmacy—Laboratory Supplies.
	2.75		J. A. Teaque—Tools and repair.
	.25		J. W. Sliff—hauling cement.
	.25	S	F. E. Epling— " meters.
	.75		F. Sara—hauling lime and meter boxes.
Nov.	14.00	F	Am. Ldy. Mchy. Mfg. Co.—Pressure Blower.
	35.20	W	W. T. Bailey—176 posts for fencing gravity spgs.
	1,841.67	S	Buffalo Meter Co.—325—⅝" meters.
	.50	F	W. M. Keefer—Hauling lumber for heating plant.
	5.20		E. A. Surface—Horseshoeing.
	.35	S	J. H. Hickman—Hauling meter boxes.
	1.05		N. & W.—Freight on Gas generator.
	.25	F	F. Epling—Hauling pipe covering heating plant.
	1.60	S	N. & W.—Freight on service fittings.
	.25		J. A. Akers—Hauling.
	2.80	F	South Express Co.—Freight on hauling App. parts.
978			
Nov.	.39	F	Ga. Lbr. Co.—Lbr. on Heating App. parts.
	1.75		W. H. Harry Co.—Tools.
	1.03	S	" Supplies for meter inst.
	1.29	F	" " for heating plant.

	9.44		Keuffel & Esser—Drafting tools.
	1.84	S	N. & W.—freight on meters.
	53.34	W	" " " sewer pipe.
	54.53	S	Merkel Bros.—Meter plugs and stops.
	109.80	B	Payroll—New station.
	116.57	W	" —Gravity Springs.
	29.37	F	" —Heating Plant at office.
	29.25	S	" —Meter installations.
	5.98	S	" —Making taps.
	22.07	F	Superior Supply Co.—Fittings for Htg. Plant.
	137.75	S	" " " —Meter box covers.
	5.50	T	" " " —Pipe for Tank overflow.
	1.80	S	" " " —Supplies for meter inst.
	1.50	F	White Pharmacy—1 set weights.
Dec.	250.00	F	Burroughs Add. Mch. Co.—1 adding machine.
	15.88	F	W. A. Bodell—Enamel basin and erection.
	2.00	S	" Curb cocks.
	.50	S	Lee Cornett—Hauling meters.
	.68	S	N. & W.—freight on meters, couplings, etc.
	.50	S	J. H. Perdue—Hauling meters tops.
	.40	S	J. S. Prophet— " " boxes.
	1.40	F	J. H. Wilson — " sand, etc. vault.
	2.43	P	N. & W.—freight on valves.
	.40	S	J. C. Akers—Hauling meter boxes.
	6.50	F	Bluefield Furniture Co.—1 washstand.
	329.48	F	W. F. Dietz—Material and labor office heating Plt.
	36.90	P	Eddy Valve Co.—4—4" valves.
	16.75	E	W. H. Ford—Platting on pipe atlas.
	5.86	F	Ga. Lbr. Co.—Lumber for Heating Plant.

1908—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
	.25		W. H. Harry Co.—Tools.
	2.10	S	" —Supplies for meter inst.
	1.57	P	" — " " laying mains.
	1.65	F	" —Glass for office.
	.50	P	Enterprise Co.—Plugs.
	1.42	P	Miller Supply Co.—Explosives.
	105.00	R	Laurel Creek Springs Land.
	29.83	S	H. Mueller Co.—Corporation Cocks.
	120.37	S	Meter installation payroll.
	80.48	W	Payroll—Gravity Springs.
	47.17		" —Storage Ground.
	3.76	S	Superior Supply Co.—Cement for meter inst.
	5.76		" " " —Fittings.
979			
5/20.	$750.00	R	Balley & ester Springs No. 7 and 8 1.5 acres.
6/ 4.	400.00	R	Robert W. Tuggle " No. 9 1.17 "
6/ 4.	800.00	R	" " " " No. 10 " 11.
5/20.	250.00	R	C. A. Bailey—Additional land Spring No. 6.
	$29,376.54		
	362.17		Deduct for materials sold to City. Companies & individuals.
	$29,014.37—Total.		

1908—Income.

1/31.	$147.30	Bills rendered in January.
2/29.	414.73	" " " February.
3/31.	752.15	" " " March.
4/30.	9,832.70	" " " April.
5/31.	577.42	" " " May.
6/30.	337.11	" " " June.
7/31.	6,124.85	" " " July.
8/31.	811.85	" " " August.
7/30.	1,108.36	" " " September.
10/30.	6,393.63	" " " October.
11/30.	370.43	" " " November.
12/30.	729.98	" " " December.
	$27,600.51	
	1,761.21	Deduct for adjustments.
	$25,839.30	Total. (Includes $1,220.26 Hydrant Rental Per advise of W. McCarthy.)

1908—Operation.

Jan.	$81.00	G. H. Buchanan Co.—Office forms.
	1.07	Bluestone Traction Co.—Light.
	18.00	Postmaster—stamps.
	1.00	White Pharmacy—Bill Book.

1908—Operation.—*Continued.*

Month.	Amount.	Description.
Jan.	$19.70	A. L. Rhoads—Traveling expense.
	3.92	Office Expense.
	4.00	Daily Telegraph Sub.
	13.97	Sundry Office Expense.
	83.33	W. McCarthy—Salary.
	26.67	Blanch Nash—Stenographer.
	60.00	Payroll—Inspection.
	143.21	" —Pumpers and Firemen.
	75.00	A. L. Rhoads—Salary.
	66.67	E. G. Betelle — "
	200.00	J. M. Sanders—Legal Expense.
	4.00	Susan Sanders—Janitress.
	8.50	Standard Fuel & Supply Co.—2 ton coal.
	15.02	St. Clair & Goodson—Feed, oil, etc.
Feb.	12.00	Allen, Lane & Scott—50 copies Reynold's Brief.
	1.76	Bluestone Traction Co.—Light.
	.50	Underwood Co.—Typewriter expense.
	8.00	Postmaster—Stamps.
	2.15	E. P. Godfrey—Cost case vs. Geo. Whitworth.
	66.67	C. G. Betelle—Salary.
	17.55	Sanders & Crochet—Legal costs in Cohen case.
	13.70	Bluefield Book & Stationery Co.—Office Supplies.
	180.00	H. B. Hayes & Co.—Audit 1/1/07—12/31/07.
	148.04	W. H. Coffman Coke Co.—6 carloads coal.
	9.25	Bluefield Telephone Co.—Phone rent.

	83.33	W. McCarthy—Salary.
	26.67	Blanch Nash—Stenographer.
	4.00	Susan Sanders—Janitress.
	106.84	N. & W.—Freight on coal.
	60.00	Payroll—Inspection.
	127.06	" —Pumping.
	4.20	" —Coal at Ada.
	75.00	A. L. Rhoads—Salary.
	100.00	A. W. Reynolds—Sup. Ct. services Comp. vs. State.
	8.06	Standard Oil Co.—Gasoline.
	4.25	" Fuel Supply Co.—Coal.
	6.97	St. Clair & Goodson—Feed.
	.60	" " " " —Oil, etc. for office.
Mar.	20.00	Postmaster—Stamps.
	1.28	Bluestone Traction Co.—Light.
	66.67	C. G. Bettelle—Salary.
	9.90	Bluefield Book & Stationery Co.—Supplies for Off.
	10.76	Sundry office expense.
	64.65	Telegraph Ptg. Co.—Blank Bills, Advertising, etc.
	1.75	A. L. Greenwood—Letter Heads.
	2.00	Sanders & Crockett—Legal Expense Cohen case.
981		
Mar.	$3.30	Legal Costs—Company vs. State.
	83.33	W. McCarthy—Salary.
	26.67	Blanch Nash— "
	75.00	A. L. Rhoads— "
	4.00	Susan Sanders— "
	9.25	Bluefield Telephone Co.—'Phone.
	60.00	Payroll—Inspection.

1908—Plant Account.—*Continued.*

1908—Operation.—*Continued.*

Month.	Amount.	Description.
	8.77	St. Clair & Goodson—Feed, Oil, etc.
Apr.	17.00	Postmaster—Stamps.
	3.36	N. & W.—Freight on oil for Ada.
	1.24	Bluestone Traction Co.—Light
	66.67	C. G. Betelle—Salary.
	9.55	Bluefield Book & Stationery Co.—Office Supplies.
	9.00	G. H. Hill—Maps of Bluefield.
	35.40	Chas. H. Moore Oil Co.—Oil.
	83.33	W. McCarthy—Salary.
	26.67	Blanch Nash— "
	75.00	A. L. Rhoads— "
	4.00	Susan Sanders— "
	11.30	Bluefield Telephone Co.—'Phone.
	2.75	S. Pedige—Towels.
	60.00	Payroll—Inspection.
	115.83	" Plumbing.
	116.67	State of W. Va. license Tax on Charter to 6/30/09.
	4.25	Standard Fuel & Supply Co.—1 ton coal.
	12.38	St. Clair & Goodson—Feed.
	6.25	Standard Oil Co.—oil.
	.35	M. G. Whitlow—1 map.
May.	1.87	Bluestone Traction Co.—Light.
	5.00	Postmaster—Stamps.
	12.17	City License Tax.
	66.67	C. G. Betelle—Salary.
	3.21	Sundry office expense.
		Commercial Printing Co.—Envelopes.

	3.21	Sundry office expense.
	1.50	Greenwood Printing Co.—Envelopes.
	83.33	W. McCarthy—Salary.
	26.67	Blanch Nash— "
	75.00	A. L. Rhoads— "
	4.00	Susan Sanders— "
	10.25	Bluefield Telephone Co.—'Phone.
	60.00	Payroll—Inspection.
	9.23	St. Clair & Goodson—Feed.
	3.00	S. S. Wallace—Photos of Tanks.
June.	66.67	C. G. Betelle—Salary.
	20.00	Postmaster—Stamps.
	16.05	E. A. Surface—Sharpening tools and blacksmithing.
	8.00	Bluestone Publishing Co.—Notices.
	160.25	Dly. Tel. & Ptg. Co.—Blank Forms, Etc.
982		
June.	$83.33	W. McCarthy—Salary.
	75.00	A. L. Rhoads— "
	26.67	Blanch Nash— "
	4.00	Susan Sanders— "
	10.25	Bluefield Telephone Co.—'Phone.
	85.67	Payroll—Pumping.
	60.00	" —Inspection.
	7.55	St. Clair & Goodson—Feed, oil, etc.
July.	66.67	C. G. Betelle—Salary.
	.75	East End Pharmacy—12 pencils.
	13.00	Postmaster—Stamps.
	1.56	Bluestone Traction Co.—Light.
	8.25	" Publishing Co.—office forms.

1908—Plant Account.—*Continued.*

1908—Operation.—*Continued.*

Month.	Amount.	Description.
	2.83	Office Expense—Telegrams, etc.
	55.89	Coffman Coke Co.—2 carloads coal.
	32.25	J. H. Gallehon—Legal—Mannie Simpson case.
	35.13	N. & W.—freight on coal.
	10.25	Bluefield Telephone Co.—'Phone.
	.15	M. G. Whitlow—Bucket.
	83.33	W. McCarthy—Salary.
	75.00	A. L. Rhoads— "
	26.67	Blanch Nash— "
	4.00	Susan Sanders— "
	60.00	Payroll—Inspection.
	134.28	" —Pumping.
	10.84	St. Clair & Goodson—Feed, Oil, Etc.
Aug.	66.67	C. G. Betelle —Salary.
	13.00	Postmaster—Stamps.
	2.15	South Express Co.—Express.
	.84	Bluestone Traction Co.—Light.
	2.00	Office Electric Installation Inspection.
	11.90	S. A. Charles—Repair Typewriter.
	.45	South Express Co.—Express.
	3.00	Samuel Funk—framing rules and regulations.
	30.00	Booth, Garrett & Blair—Water Analysis.
	6.24	Sundry office expense.
	1.50	C. P. Clayton—Livery.
	42.94	Domestic Coal Co.—2 carloads coals.
	83.33	W. McCarthy—Salary.

	83.33	W. McCarthy—Salary.
	75.00	A. L. Rhoads— "
	26.67	Blanch Nash— "
	4.00	Susan Sanders— "
	40.40	W. McCarthy—Expense to Philadelphia and return.
	15.85	Sundry office expense.
	88.34	N. & W.—freight 3 carloads coal.
	60.00	Payroll—Inspection.
	155.13	" —Pumping.
983		
Sept.	$4.00	Dly. Telegraph Subscription.
	24.42	Domestic Coal Co.—Coal.
	24.95	Dly. Telegraph—Printing Forms.
	25.00	East End Pharmacy—Chemicals.
	10.35	Flat Top Book & Stationery Co.—Office Supplies.
	10.00	DeMays—Plumber's License.
	24.42	N. & W.—freight on coal.
	1.50	C. P. Claytor—Livery.
	2.75	Sheriff Summons.
	10.50	Bluefield Telephone Co.—'Phone.
	1.90	Whitlow Hardward Co.—Clothes Wringer & copper.
	100.00	City Recorder—Fine W. McCarthy.
	83.33	W. McCarthy—Salary.
	26.67	Blanch Nash— "
	4.00	Susan Sanders— "
	60.00	Payroll—Inspection.
	170.34	" —Pumping.
	206.00	Sanders & Crockett—Legal Expense.
	13.48	Standard Oil Co.—Oil.

1908—Plant Account.—*Continued.*

1908—Operation.—*Continued.*

Month.	Amount.	Description.
	10.12	St. Clair & Goodson—Feed & oil.
	12.71	L. E. St. Clair " " "
	66.67	C. G. Betelle—Salary.
	.73	Bluestone Traction Co.—Light.
	.50	C. B. Bell—Notary fees.
	3.00	Postmaster—Stamps.
	85.00	A. L. Rhoads—Salary.
Oct.	3.15	South Express Co.—Express.
	10.00	W. A. Bodell—Bond Premium.
	10.00	W. F. Deitz— " "
	16.47	Domestic Fuel Co.—1 carload coal.
	83.33	W. McCarthy—Salary.
	26.67	Blanch Nash— "
	4.00	Susan Sanders— "
	2.50	Dly. Telegraph Co.—Envelopes.
	.75	Sheriff Summons.
	10.95	Bluefield Telephone Co.—'Phone.
	170.64	Payroll—Pumping.
	60.00	" —Inspection.
	125.00	A. W. Reynolds—Legal Expense Cohen case.
	13.34	L. E. St. Clair—Feed, Oil, Etc.
	6.50	Standard Fuel & Supply—Coal.
	32.00	Postmaster—Stamps.
	66.67	C. G. Betelle—Salary.
	85.00	A. L. Rhoads— "
	1.52	Bluestone Traction Co.—Light.
	2.85	E. P. Godfrey—Legal Expense.

	1.52	Bluestone Traction Co.—Light.
	2.85	E. P. Godfrey—Legal Expense.
	1.10	South Express Co.—Express.
984		
November.	$3.50	J. T. Akers—Legal Expense Copies of Franchise.
	66.67	C. G. Betelle—Salary.
	1.36	Bluestone Traction Co.—Light.
	5.00	Postmaster—Stamps.
	10.00	H. A. Ritz—Legal Fee in Kelly case.
	166.78	Domestic Coal Co.—8 carloads coal.
	22.25	Daily Telegraph & Printing Co.—Office Forms.
	4.95	Flat Top Book & Stationery Co.—Supplies.
	26.55	Sanders & Crockett—Costs in Cohen case.
	145.40	N. & W.—freight on coal.
	96.58	" — " " "
	7.50	Bluefield Telephone Co.—'Phone.
	.85	Flat Top Book & Stationery Co.—Supplies.
	.30	M. G. Whitlow—Supplies.
	83.33	W. McCarthy—Salary.
	26.67	Blanche Nash— "
	4.00	Susan Sanders— "
	43.25	W. Mann—6 registers.
	60.00	Payroll—Inspection.
	77.34	" —Pumping.
	17.85	" Labor at Ada.
	43.85	A. L. Rhoads—Expense to Philadelphia.
	16.00	Standard Fuel & Supply Co.—Coal.
	8.42	L. E. St. Clair—Feed, etc.
	85.00	A. L. Rhoads—Salary.

1908—Plant Account.—*Continued.*

1908—Operation.—*Continued.*

Month.	Amount.	Description.
	200.00	Sanders & Crockett—Retainer Fee to 12/15/09.
December.	66.67	C. G. Betelle—Salary.
	2.37	Bluestone Traction Co.—Light.
	25.00	Postmaster—Stamps.
	2.07	Bluestone Traction Co.—Light.
	66.60	Daily Telegraph & Printing Co.—Office Forms.
	20.25	Flat Top Stationery Co.—Supplies.
	4.00	Susan Sanders—Salary.
	7.80	Bluefield Telephone Co.—'Phone.
	83.33	W. McCarthy—Salary.
	23.33	Chas. E. Mengel—Salary.
	20.78	" " " —Traveling Expenses.
	60.00	Payroll—Inspection.
	55.52	" —Pumping.
	26.67	Blanche Nash—Salary.
	1,597.56	Taxes (Pip- Line).
	85.00	A. L. Rhoads—Salary.
	$10,528.65	
	1,200.00	Philadelphia Salaries Charged.
	133.28	" Rent "
	$11,861.93	Total.

Jan.	$5.75	Bluefield Hardware Co.—Varnish and filler office.
	9.25	W. H. Coffman Co.—5 yds. Stone for office building.
	5.10	Climax Electric Supply Co.—Electric Wiring in office.
	4.60	Sundry office maintenance.
	40.00	M. S. Pedigo—Office Repairs and painting.
	163.35	Payroll—Pipe line maintenance.
	23.51	" office repair.
	18.37	" maintenance Ada Spring.
	4.59	Saxon Lime & Lumber Co.—Sash and transoms.
Feb.	1.54	W. F. Dietz—Solder for office repair.
	.15	Ga. Lbr. Co.—Plaster " " "
	7.50	" " " —Shingles " stable "
	2.91	W. H. Harry & Co.—Hardware for office repair.
	1.00	Bluefield Hardware Co.—Rosin " " "
	12.00	National Meter Co.—12 5/8" pistons.
	96.46	Payroll—Pipe line maintenance.
	74.80	" —office repair.
	3.50	" —meter "
	10.81	Superior Supply Co.—Supplies for Ada Station.
	.48	" " " — " " office repair.
	3.03	M. G. Whitlow—Varnish, etc. " " "
	3.75	W. H. Coffman Co.—3 yds. stone rip rap.
	8.40	Ga. Lbr. Co.—Cement for springs and pipe lines.
	26.50	Payroll—Maintenance Gravity Springs.
	26.43	" " Pipe Line.
	15.60	" —Office Repair.
	13.95	Superior Supply Co.—Packing.
Apr.	.25	J. E. Akers—Hauling cement.

1908—Plant Account.—*Continued.*

1908—Maintenance.—*Continued.*

Month.	Amount.	Description.
	11.38	N. & W.—freight on cement for spring repairs.
	428.73	Payroll—Pipe line Maintenance.
	8.00	" —Gravity Springs "
	5.00	Superior Supply Co.—Supplies for Pipe Line Maint.
	7.20	" " " — " " Ada Station "
May	3.75	Bluefield Harware Co.—White lead for office.
	10.32	W. H. Harry Co.—Paint, Etc. " "
	1.00	White Pharmacy—Rosin for Ada Repair.
	18.75	Payroll—Maintenance pipe lines.
June	3.00	Coffman Cock Co.—3 yd. stone for office repair.
	3.80	Ga. Lbr. Co. —Sashes for office repair.
	.55	W. H. Harry Co.—Supplies for " "
	28.67	Huff, Andrews & Thomas, Wood fibre for office repair.
	.63	Saxon Lime & Lumber Co.—Lath " " "
	48.08	Payroll—Pipe line maintenance.
	14.00	" —office repair.
986	11.40	Superior Supply Co.—Packing.
July	$22.37	W. J. Camper—Plastering—Office Repair.
	16.80	Huff, Andrews & Thomas—Plaster—Office Repair.
	2.17	W. H. Harry Co.—Supplies " "
	21.12	Payroll—Office Repair.
	30.34	" —Pipe line—Maintenance.
	22.50	Superior Supply Co.—2" Tap—Condenser repair.
	9.25	Saxon Lime & Lbr. Co.—Lumber—office repair.
	13.52	Chas. H. Smith—Paperhanging " "
Aug.	2.18	Ga. Lbr. Co.—Moulding for " "

	50.65	Payroll—Pipe line maintenance.
	1.15	Superior Supply Co.—Fittings, etc.
	22.00	Whitlow Co.—Papering at office.
Sept.	4.50	Standard Fuel & Supply—Sand for office repair.
	42.25	Payroll—Pipe Line—Maintenance.
	10.50	Superior Supply Co.—Portland Cement Office Repair.
	17.10	" " " —New Grates Ada Station.
	8.43	C. B. Whitlow—Varnish, etc. office repair.
	5.50	A. W. Wygal—Typewriter repair.
	13.62	Kelly Bros.—Repair paving.
	12.25	" " — " office.
	3.00	Coffman Coke Co.—3 cu. yds. stone, office repair.
	3.59	Ga. Lbr. Co.—Lumber and lime " "
	4.05	" " " Sewer Pipe—Tank overflow.
	.70	M. G. Whitlow Co.—Supplies, office Repairs.
	52.18	Payroll—Pipe line repair.
	19.00	" —Office repair.
	17.11	Superior Supply Co.—Cement for office repair.
	5.25	Standard Fuel & Supply Co.—Sand for office repair.
Nov.	.30	W. H. Harry Co.—Supplies for pipe line repair.
	15.98	National Meter Co.—Repair parts.
	126.46	Payroll—Pipe line maintenance.
	5.25	" —Meter "
	13.95	" —Ada Station "
	1.04	Superior Supply Co.—Supplies for pump maintenance.
	80.95	Payroll—Pipe line maintenance.
	25.05	" —Ada Station "
	61.95	Longacre & Ewing—Insurance.
	$1,952.18—Total.	

987 Résumé of Plant Account, Income, and Operation for 1908.

Cost of Plant and Property incurred prior to 1908..		$270,714.56
" " " " " " during year..		29,014.37
Total cost of Plant and Property incurred at end of Year.....		$299,728.93
Income from Service during Year.....		$25,839.30
Expenditure for Operation during year	$11,861.93	
" " maintenance " "	1,952.18	
Total Expenditure for Operation & Maintenance during year.....		13,814.11
Net Return Applicable to Depreciation, Interest and Dividends.....		$12,025.19

Résumé of Interest and Dividends for 1908.

Interest Paid on Loans from J. M. Wirgman.....	$135.00
Dividends for Year.....	10,080.00
Amount withdrawn for Interest and Dividends in 1908.....	$10,215.00

988 1909.

The work of extending the distribution system included the installation of eight fire hydrants, the cost of which was collected from the city.

The purchase from R. H. Bailey of the land for Spring No. 15, consisting of 236¼ acres, was made in June. The spring was fenced with woven wire and a ditch was dug to care for surface drainage. The adjacent buildings were moved to avoid any possible contamination. No clearing was done and no pipe lines were installed. The water flows for a short distance on the surface, and then disappears, flowing into Ada Spring through an underground channel.

Of the total revenue for the year 5.35% came from the city for fire hydrant rental; 33.65% from flat rate services, and 61% from metered services.

No dividend was declared for 1909.

Month.	Amount.	Acct.	Description.
Jan.	$7.10	L	Circuit Court Clerk—Recording Deeds.
	1.25		Bluefield Hardware Co.—Tools.
	8.18		" " " —Fittings.
	59.50	F	" Furniture Co.—Desks and chair.
	15.95	F	Burgess Electric Co.—Fixtures for office.
	.30		W. H. Harry Co.—Tools.
	3.95	S	" —Supplies for meter inst.
	.75		" — " " storage ground.
	.61		" — " " office.
	170.87	S	Payroll—Meter installations.
	21.70	P	" —laying mains.
	66.06	W	" —Gravity Springs.
	3.60		" —Storage Ground.
	2.10		Superior Supply Co.—Tools.
	216.03	S	" " " —Meter tops, covers & rings.
	21.48	P	" " " —Lead.
	2.85	S	" " " —cement for meter inst.
	.70		M. G. Whitlow—Tools.
Feb.	82.04	S	American Sewer Pipe Co.—160 pcs. 18" ring pipe.
	1.75	S	Sundries—meter installation.
	1.99		" —office building improvements.
	35.75	S	Payroll—meter installations.
	7.20	W	" —Gravity Springs.
	10.33		" —Office improvements.
	.88	S	" —Making taps.
	18.00	P	S. J. Goldman—Scrap lead.

1909—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
	.75		Superior Supply Co.—Tools.
	231.00	S	" " " —Meter tops and rings.
Mar.	6.70	F	Burgess Electric Co.—Fixtures for office.
	446.25	S	Buffalo Meter Co.—75—⅝" meters.
	7.25		Bluefield Hardware Co.—102'—½" pipe & fittings.
	1.75	F	Flat Top Book & Stationery Co.—Map rod.
	21.50	E	W. H. Ford—Work on pipe atlas.
	.90		W. H. Harry Co.—Tools.
	13.50	S	O. V. Hefner—18—½" stops.
	25.00	F	W. H. Pennington—Filing cabinet.
	1.80		Superior Supply Co.—Tools.
	2.88	S	" " " —Cement and fittings.
	8.64		" " " —fittings.
	2.25	S	Standard Fuel & Supply Co.—Sand for meter inst.
	189.30	S	Payroll—Meter installations.
	50.40	W	N. & W.—freight on sewer pipe.
990			
Apr.	$5.50		Bluefield Hardware Co.—Tools.
	9.64	R	" " " —Fencing for Ada Sta.
	8.77		" " " —Valvelite and bushings.
	47.83	S	H. Mueller Co.—Curb Cocks.
	210.00	S	Neptune Meter Co.—25—⅝" meters.
	112.18	P	Payroll—Laying mains.
	24.35	S	" —Meter installations.
	6.01		Sundry supplies.
	30.00	R	A. W. Reynolds—Examine title 17 acres land.
	12.40	P	Superior Supply Co.—Hemp and ¾" pipe.

	12.40	P	Superior Supply Co.—Hemp and ¾″ pipe.
	51.30	S	" " " —Meter tops and fittings.
	1.40		L. E. St. Clair—Grass seed—Ada yard.
May	90.00	P	Eddy Valve Co.—12—4″ valves.
	1.46	P	W. H. Harry Co.—Supplies.
	4.58		Kelly & Jones Co.—Tools.
	11.02		Merkel Bros.—Fittings.
	11.10	S	H. Mueller Co.—Pipe and connections.
	9.68		Bluefield Hardware Co.—Fittings and 205′—¾″ pipe.
	2.38	S	Superior Supply Co.—fittings for meter inst.
	5.64	P	" " " —60′—1½″ pipe.
	47.34	P	" " " —Lead and 246′—1″ pipe.
	5.63		Sundry tools.
	147.28	P	Payroll—Laying mains.
	47.30	S	" —Meter installation.
	30.75	E	" —Survey R. H. Bailey Farm.
June	60.27	S	Am. Sewer Pipe Co.—159 pcs. 18″ ring pipe.
	1.00		Bluefield Hardware Co.—Tools.
	7.82	P	" " " —222′—½″ pipe.
	26.78	R	" " " —nails, paint and pipe for Bailey Farm.
	62.39	R	Ga. Lbr. Co.—Lumber and shingles for Bailey F.
	37.22	P	Lynchburg Foundry Co.—Specials.
	25.70	P	M. E. Long—Plow.
	65.05	P	Payroll—Laying mains.
	36.60	S	" —Meter installation.
	321.25	R	" —R. H. Bailey Farm.
	7.20		" —Meterial cartage, etc.
	34.70	E	" —Surveying Honaker Mill Tract.
	29.98	E	" — " Bailey & Colfee "
	7.05	E	" — " W. H. Thompson "

1909—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
June.	$17.66		Sundry materials.
	.75		" supplies.
	43.22	S	Regar Co.—72 stops.
	147.00	P	Rensselaer Mfg. Co.—6—4" hydrants.
	4.50	S	Superior Supply Co.—Cement for meter inst.
	3.00		" " " —Tools.
	42.78	P	" " " —Hemp, pipe and fittings.
July.	.75		Bluefield Hardware Co.—Tools.
	5.35	W	" " " —Staples and wire.
	10.76	R	" " " —Sheet metal—Bailey F.
	54.20	F	Eimar & Amerd—Laboratory Equipment.
	5.55	F	East End Pharmacy— " "
	381.18	R	Payroll—Bailey Farm.
	24.05	P	" —Laying mains.
	24.10	S	" —Meter installation.
	50.34	R	Ga. Lbr. Co.—Shingles and lumber, Bailey Farm.
	6.14	S	" Cement, Lumber, etc.
	4.10		W. H. Harry Co.—Tools.
	40.51	R	" Hardware and supplies Bailey Farm.
	4.16		" Sundry materials.
	2.25	R	City Clerk Transfer Deed Bailey Farm.
	140.00	E	W. H. Ford—Platting on pipe atlas.
	53.08		Sundry materials.
	39.49	R	" bills—Bailey Farm.
	33.52	P	Superior Supply Co.—Lead and galvanized pipe.
	7.50		" " " —Tools.
	135.80	R	" " " —Cement and fencing—Bailey Farm.

	260.62	W	" " " —Cement and fencing Gravity Springs.
	.90	S	" " " —Supplies.
	14.02	F	Whitall-Tatum Co.—Laboratory Equipment.
Aug.	1.50		Bluefield Hardware Co.—Tools.
	10.65	W	" " " —Staples and wire Gravity Springs.
	2.94	W	Ga. Lbr. Co.—Lumber for Gravity Springs.
	12.81	W	W. H. Harry Co.—Hardware for " "
	5.05		" —Tools.
	2.72	R	" —Hardware for Bailey Farm.
	52.68	P	Payroll—Laying Mains.
	147.57	W	" —Gravity Springs.
	18.00	S	" —Meter installation.
	26.55	E	" —Surveys Bailey & Colfee tracts.
	40.60	R	" —Bailey Farm.
992			
Aug.	$4.00	R	Superior Supply Co.—Supplies for Bailey F.
	44.92	S	" " " —Meter tops and rings.
	48.31	P	" " " —1½" pipe and fittings.
Sept.	1.49	W	Ga. Lbr. Co.—Lumber for Gravity Springs.
	1.90		W. H. Harry—Tools.
	3.60		" —Sundry supplies.
	14.38		H. Mueller Co.—Tools.
	20.22	S	" —Corporation Cocks.
	89.28	W	Payroll—Gravity Springs.
	23.50	S	" —Meter installation.
	82.90	R	" —Bailey Farm.
	15.36		Sundry Supplies.
	30.70	S	Superior Supply Co.—Meter tops and rings.

1909—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
	1.10		M. G. Whitlow—Tools.
	2.13	F	" —Laboratory Equipment.
Oct.	136.37	P	Bluefield Hardware Co.—Galvanized pipe.
	2.75	W	" " " —Wire for Gravity Spgs.
	4.57	W	Express Ada Springs.
	20.77		Sundry expenses.
	8.15		W. H. Harry—Sundry Plant expense.
	15.70	F	Eimer & Amerd—Laboratory Equipment.
	138.84	P	Ludlow Valve Co.—9—6", 4—4" valves.
	50.05	W	Payroll—Gravity Springs.
	241.58	P	" —Laying mains.
	19.15	R	" —Bailey Farm.
	12.25	S	" —Meter installation.
	210.00	S	Pittsburgh Meter Co.—25—⅝" meters.
	20.33	P	Superior Supply Co.—Lead, etc.
	33.69	R	Peerless Wire Fence Co.—Fencing Bailey & Colfee tract.
Nov.	86.29	P	Bluefield Hardware Co.—Lead.
	2.75	E	W. H. Ford—Work on pipe atlas.
	2.48		W. H. Harry Co.—Tools.
	1.90	P	" —Supplies for mains.
	50.00	R	Deed for Rt.-of-Way from Lucy J. Taylor for pipe and telephone line.
	42.72	S	National Meter Co.—5—⅝" meters.
	329.95	P	Payroll—Laying mains.
	14.00	P	" —Meter installation.
	7.70		Sundry plant expense.
	62.57	P	Superior Supply Co.—Galvanized pipe.

	1.85	S	" " " —Cement for meter inst.
Dec.	7.22		Sundry Plant Costs.
	3.25	E	W. H. Harry—Tools.
	200.00	R	C. W. Mills—Rt.-of-Way Jarrell Sp. to Ada Sp.
993			
Dec.	$9.50	E	G. H. Hill—Bluefield Maps.
	5.25	S	Payroll—Meter installations.
	108.50	P	Rensselaer Mfg. Co.—4—4" hydrants.
	15.60		Superior Supply Co.—Tools.
	9.45	S	" " " —Fittings meter inst.
	42.61	S	Meter tops and rings and fittings.
	60.00	R	A. W. Reynolds—Expense of titles Bailey and Lester Lands.
June.	4,250.00	R	R. H. Bailey—Spring No. 15—236¼ acres.
	$11,928.26		
	352.64		Deduct for materials sold to City, Companies and individuals.
	$11,575.62—Total.		

1909—Income.

Month.	Amount.	Description.
	$8,540.71	Flat rate services.
	15,463.95	Metered services.
	1,357.50	Fire Hydrant rental.
	$25,362.16—Total.	

1909—Plant Account.—*Continued.*

1909—Operation.

Month.	Amount.	Description.
Jan.	$22.25	Sundries—Light, stamps, etc.
	10.05	Flat Top Book & Stationery Co.—Supplies.
	47.78	W. McCarthy—Expense account Charleston.
	60.00	Payroll—Inspection.
	39.85	" —Pumping.
	1.75	" —Labor.
	.40	Superior Supply Co.—Waste.
	15.50	Stone Printing Co.—Meter reading books.
	20.94	L. E. St. Clair—Feed, oil, etc.
	25.00	Sanders & Crockett—Legal Expense.
	10.37	M. G. Whitlow—Office Supplies.
994		
Feb.	$18.98	Sundry office Expense—Light, stamps, tel. etc.
	5.50	Citizens Coal & Supply Co.—Coal.
	28.00	Payroll—Pumping.
	7.75	" —Labor.
	60.00	" —Inspection.
	8.25	Daily Tel. & Ptg. Co.—Office Forms, etc.
	7.65	Flat Top Book Co.—Stationery.
	200.00	Sanders & Crockett—Fee in Nan Simpson case.
	9.44	L. E. St. Clair—Feed.
	128.60	W. McCarthy—Traveling Expense to Charleston.
	2.10	Clerk Circuit Court—Legal Costs in Cohen case.
	6.24	Standard Oil Company—Oil.

Mar.	2.96	Sundry office expense.
	8.25	Citizens Coal & Supply Co.—Coal.
	.50	Flat Top Book & Stationery Co.—Pencils.
	5.50	Dly. Te. Ptg. Co. —Adv. and water bills.
	44.90	Sundry office expense—Light, phone, stamps, etc.
	3.43	" Station expense.
	1.25	J. H. Hogan—Letter book.
	150.00	H. B. Hayes—Audit 1/1/08—12/31/08.
	60.00	Payroll—Inspection.
	43.05	" —Pumping.
April	11.50	Dly. Te-. Ptg. Co.—Adv. and water bills.
	28.05	J. H. Gollehon—Legal Expense City case.
	1.98	City Taxes.
	10.00	Sec. of State—Certified Copy of Charter.
	60.00	Payroll—Inspection.
	33.20	" —Pumping.
	24.32	Sundries—Telephone, Light, Stamps, etc.
	100.00	A. W. Reynolds—Fee in Nannie Simpson case.
	18.08	L. E. St. Clair—Feed, oil, etc.
	50.00	Elbert Williamson—Notarial Services City case.
	5.34	Standard Oil Co.—Oil.
May	150.00	William Glasgow—Retainer Fee.
	12.65	Clark C. & C. Court—Legal Costs Crockett case.
	5.00	N. & W. pipe line rental.
	12.00	Sundry office supplies.
	120.00	State of West Virginia License Tax.
	10.64	L. E. St. Clair—Feed.
	1.75	Sundry Stable Expense.
	41.21	" Office " light, phone, stamps, etc.
	21.00	A. L. Rhoad—Expense Princeton in Lester case.

1909—Plant Account.—*Continued.*

1909—Operation.—*Continued.*

Month.	Amount.	Description.
	60.00	Payroll—Inspection.
	44.07	" —Pumping.
	73.00	" —Witnesses in Lester case.
995		
June	$8.89	Bluefield Feed Co.—Feed.
	10.24	Sundry office expense.
	5.00	Dly. Tel. & Ptg. Co.—Letter heads and bills.
	5.50	Eimer & Amend—Laboratory Supplies.
	60.00	Payroll—Inspection.
	43.00	" —Pumping.
	45.70	Office Expense—Stamps, Light, phone, etc.
	188.10	Sanders & Crockett—Legal Fees various cases.
July	8.77	Bluefield Feed Co.—Feed.
	67.30	Sanders & Crockett—Legal Costs city case.
	5.75	Citizens Coal and Supply Co.—Coal.
	25.00	Dly. Tel. Ptg. Co.—Forms, Advertising, etc.
	8.45	Flat Top Book & Stationery Co.—Supplies.
	150.00	Wm. Glasgow—Fee as retainer.
	60.00	Payroll—Inspection.
	71.65	" —Pumping.
	10.00	City Treasurer License Tax.
	32.08	Sundry Expenses—Light, Phone, Stamps, etc.
	15.00	Sanders & Crockett—Legal Expense.
August	3.50	Greenwood Printing Co.—Envelopes.

	9.15	Bluefield Feed Co.—Feed.
	1.60	Office Expenses.
	30.00	F. C. McDowell—Oil.
	2.75	J. Hogan—Letter heads.
	35.58	Standard Oil Co.—Oil.
	60.00	Payroll—Inspection.
	79.75	" —Pumpers.
Sept.	10.48	Bluefield Feed Co.—Feed.
	2.33	Sundry Office Expenses.
	43.70	Dly. Tel. Ptg. Co.—forms and advertising.
	40.00	E. H. Easley—Removal Plumber's license.
	4.00	Dly. Tel. Ptg. Co.—Subscription.
	60.00	Payroll—Inspectors.
	75.43	" —Pumping.
	47.53	Sundry office expenses—Phone, light, stamps, etc.
	3.00	" Stable " —Feed, etc.
	12.75	Standard Oil Co.—Oil.
October	13.21	Bluefield Feed Co.—Feed.
	36.83	Sundry office expenses—Phone, light, stamps, etc.
	24.50	Dly. Tel. & Ptg. Co.—Postals, forms, bills, etc.
	60.00	Payroll—Inspection.
	101.10	" —Pumping.
996		
Nov.	$7.06	Bluefield Feed Co.—Feed.
	6.35	Citizens Coal & Supply Co.—Coal.
	20.40	Dly. Tel. & Ptg. Co.—Envelopes, Bills, etc.
	7.05	Flat Top Book & Stationery Co.—Supplies.
	31.49	A. D. Hammann—1 carload coal.

1909—Plant Account.—*Continued.*

1909—Operation.—*Continued.*

Month.	Amount.	Description.
	60.00	Payroll—Inspection.
	158.67	" —Pumping.
	50.98	Pocahontas Coke Co.—1 carload coal.
	30.85	Sundry office expense—Phone, light, stamps, etc.
	378.25	Sanders & Crockett—Retainer fee and other legal expense.
	8.36	Standard Oil Co.—Oil.
	20.78	C. E. Mengel—Traveling Expenses.
Dec.	8.85	Bluefield Feed Co.—Feed.
	16.88	Traveling Expenses.
	27.71	Sundry office expenses—Phone, light, stamps, etc.
	73.46	Citizens Coal & Supply Co.—2 carloads coal.
	2,221.91	State of West Virginia—Pipe Line Tax.
	27.30	Domestic Fuel Co.—1 carload coal.
	48.75	Dly. Tel. & Ptg. Co.—Advertising and office forms.
	17.60	Flat Top Book & Stationery Co.—Stationery.
	16.62	R. H. Bailey—Taxes on Bailey Farm.
	77.08	N. & W.—freight on coal.
	6.00	Payroll—coal handling at Ada.
	18.00	" " " " Beaver Pond.
	60.00	" Inspection.
	196.72	" Plumbing.
	48.66	Sanders & Crockett—Legal Expense Brief city case.
	200.00	⅔ W. M. McCarthy's Salary January and February.
	1,500.00	" " March to December Incl.
	1,200.00	A. L. Rhoads' "

200.00	C. G. Betelle	" January to March Incl.
719.39	C. E. Mengel	" January to November 7 Incl.
102.67	B. C. McLean	" November 16 to December "
$11,095.49		
1,200.00	Philadelphia office salaries charged.	
133.28	" " rent "	
$12,428.77—Total.		

997

1909—Maintenance.

Jan.	$84.75	Payroll—Pipe line maintenance.
Feb.	.25	Supplies " " "
	112.38	Payroll— " "
	10.00	" —Meters "
	15.70	" —Ada Station "
	.88	Superior Supply Co.—Supplies for Ada Pumping.
March	12.00	Buffalo Meter Co.—Repair Parts.
	3.71	W. H. Harry Co.—Varnish, etc., for office.
	1.11	Superior Supply Co.—Lubricator Repair Part.
	71.65	Payroll—Pipe line maintenance.
	7.50	" —Gravity Springs "
	8.00	" —Ada Station "
	6.33	" —Meter "
	6.80	" —Office "
April	59.13	" —Pipe Line "
	7.00	" —Gravity Springs "
	6.00	" —Meter "
	58.73	" —Ada Station "

1909—Plant Account.—*Continued.*

1909—Maintenance.—*Continued.*

Month.	Amount.	Description.
	5.28	Superior Supply Co.—Packing for Ada Pump.
	6.73	W. H. Harry Co.—Supplies—Office repairs.
May	71.49	Payroll—Pipe Line Maintenance
	4.00	" —Meter "
	6.00	" —Gravity Springs "
	2.40	" —Office "
June	63.63	" —Pipe Line "
	8.00	" —Gravity Spgs. "
	4.00	" —Office "
	9.20	National Meter Co.—Repair parts.
	1.40	Sundry Maintenance at Ada Station.
	5.00	Superior Supply Co.—4" cock for Pipe Line repair.
July	99.78	Payroll—Pipe line maintenance.
	8.00	" —Ada Station "
	38.65	" —Gravity Springs "
	4.00	" —Office "
	2.45	Superior Supply Co.—Fitting Ada Pump Repair.
	.50	" " " — " Pipe Line "
August	12.00	C. P. Claytor—Livery for Repair Gravity Springs.
	31.50	Longacre & Ewing—Fire Insurance.
	39.42	Ga. Lbr. Co.—Lumber for office repairs.
	25.25	W. H. Harry Co.—Nails and shingle stain for off. reps.
	4.20	Netune Meter Co.—Discs.
	3.95	National " " —Repair Parts.
	125.11	Payroll—Pipe line maintenance.

	125.11	Payroll—Pipe line maintenance.
	25.95	" —Ada Station. "
	35.21	Superior Supply Co.—Supplies for pump repair.
	8.86	M. G. Whitlow—Paint and tine for office repair.
998		
Sept.	$19.50	Arlington Mfg. Co.—Stack paint.
	3.77	Ga. Lbr. Co.—Lumber for office repairs.
	46.38	W. H. Harry Co.—Paint, stain, etc., for office.
	134.23	Payroll—Pipe line maintenance.
	12.00	" —Ada Station "
	66.00	" —Office "
	5.85	Superior Supply Co.—Cement for pipe line repair.
	1.25	H. R. Worthington—Meter disc.
	8.20	M. G. Whitlow—Hardware for office repair.
	.50	" —Repairs for pump.
October	12.50	National Meter Co.—Meter repair parts.
	63.00	Payroll—Pipe line maintenance.
	4.00	" —Ada Pump "
	4.00	" —Meter "
	16.30	Superior Supply Co.—Turning plungers and packing.
	1.35	" " " —Cement for pipe line repair.
Nov.	64.55	Longacre & Ewing—Insurance on cottage at Ada.
	89.38	Payroll—Pipe line maintenance.
	5.20	" —Gravity Springs "
	15.20	" —Ada Station "
	20.00	" —Office "
	1.39	Superior Supply Co.—Cement for office maintenance.
	8.08	" " " —Packing, bolts, etc.
Dec.	.93	Ga. Lbr. Co.—Lumber for office.

1909—Plant Account.—*Continued.*

1909—Maintenance.—*Continued.*

Month.	Amount.	Description.
	.49	W. H. Harry Co.—Nails Beaver Pond repair.
	1.80	Neptune Meter Co.—2⅝" train gears.
	184.61	Payroll—Maintenance Pipe line.
	17.50	" — " Ada Station.
	113.05	" — " Beaver Pond Station.
	13.50	" — " Gravity Springs.
	6.00	" — " Meters.
	17.37	Superior Supply Co.—Gaskets, fittings & mach. work.
	1.62	M. G. Whitlow—Repair links Beaver Pond Pump.
	1.25	H. R. Worthington Co.—Meter train.
	$2,084.64—Total	

999 Résumé of Plant Account, Income, and Operation for 1909.

Cost of Plant and Property Incurred prior to 1909...	$299,728.93
" " " " " " during year....	11,575.62
Total Cost of Plant and Property at end of Year.	$311,304.55
Income from Service During Year.....	$25,362.16
Expenditure for Operation during Year.. $12,428.77	
" " Maintenance " " .. 2,084.64	
Total " " Operation & Maintenance during year.	14,513.41
Net Return Applicable to Depreciation, Interest and Dividends.....	$10,848.75

Résumé of Interest and Dividends for 1909.

Interest paid on Loans from J. M. Wirgman and Stockholders	$1,125.00
Dividends for Year.....	0.00
Amount Withdrawn for Interest and Dividends in 1909.	$1,125.00

1000 1910.

The extension work on the distribution system included the installation of two fire hydrants, the cost of which was collected from the city.

Land to the extent of 1.23 acres was purchased from Thos. P. Morgan for Springs Nos. 12, 13 and 14; 1.06 acres from R. H. Bailey for Spring No. 16; 1.99 acres from B. P. Wilson for Spring No. 17, and 41.88 acres from W. T. Bailey for Spring No. 18. Aside from the preliminary work on surveys in connection with the new springs, considerable work was done at Beaver Pond Pumping Station. The original building was torn down and a new frame structure built on stone masonry piers, was erected. The walls were of rough sheathing covered with building paper and heavy corrugated galvanized iron. The roof was of 7/8" sheathing covered with Carey patented roofing. The locomotive boiler at the station was removed and the 100 H. P. Erie boiler that had been replaced at Ada Station was installed at Beaver Pond.

Of the total revenue for the year, 4¾% came from the city for fire hydrant rental, 29.6% came from flat rate consumption, and 65.65% came from metered consumption. A rental of $45 which the company received from the tenants of the Bailey farm has been included in the total revenue.

1001 A dividend of 3% amounting to $7,560 was declared for 1910.

Date.	Amount.	Acct.	Description.
Jan.	$55.45	P	Payroll—Laying Mains.
	6.00	R	" —R. H. Bailey Farm.
	76.00	E	" —Surveys.
	3.50	S	" —Meter installation.
	10.00	F	Phelps Furniture Co.—Chair and rack.
	18.20	P	Superior Supply Co.—1½" and 2" black pipe.
	66.76	P	" " " —Lead, hemp, fittings.
Feb.	1.50	F	W. H. Harry Co.—2 safe castors.
	1.40		" —Tools.
	1.25	E	W. H. Ford—Work on pipe line atlas.
	5.25	S	Payroll—Meter installation.
	100.80	S	Pittsburgh Meter Co.—12 ⅝" meters.
	2.10		Sundry supplies.
	.76	S	Superior Supply Co.—fittings.
	11.64		" " " —tools.
March	2.51	S	N. & W.—freight on meters.
	5.00	R	Options—Mountain Springs.
	5.25		W. H. Harry Co.—Tools.
	11.50	P	Payroll—Laying mains.
	12.75	S	" —Meter installations.
	7.89		Superior Supply Co.—Tools.
	42.93	S	" " " —Meter tops and rings.
April	21.15	S	Merkel Bros.—Stop-cocks.
	1.75		Tools.
	1.90		Sundry supplies.
	17.75	P	Payroll—Laying mains.
	151.05	W	" —New springs.

	5.25	S	" —Meter installations.
	12.00		W. Plattner—Detector.
	2.10		Superior Supply Co.—Tools.
	21.47	P	" " " —360'—1" galv. pipe.
	4.98		" " " —Fittings.
May	13.89		W. H. Harry Co.—Tools and sundry supplies.
	61.75	W	Payroll—Gravity Springs.
	104.50	P	" —Laying mains.
	7.90	S	" —Meter installations.
	11.60		Superior Supply Co.—Tools.
	1.36	S	" " " —Meter inst. supplies.
	65.70	P	" " " —814'—1½" pipe & fittings.
	8.40	P	" " " —Lead and fittings.
	6.25	E	W. H. Ford—Work on pipe line atlas.
1003			
June	$8.70		W. H. Harry Co.—Tools.
	21.67	S	Merkel Bros.—Corporation Cocks.
	142.73	P	Payroll—Laying Mains.
	17.00	W	" —New gravity Springs.
	4.00	S	" —Meter installation.
	201.60	S	Pittsburgh Meter Co.
	301.97	P	Superior Supply Co.—Galvanized pipe.
	41.25	S	" " " —Meter rings and tops.
	8.40		" " " —Tools.
	.35	S	" " " —Meter inst. supplies.
	3.25	E	W. H. Ford—Work on pipe line atlas.
July	21.00	W	Bluefield Hardware Co.—60 rods wire fencing.
	.40		W. H. Harry—Tools.
	17.55	P	Ludlow Valve Co.—3—3" valves (hub).

1910—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
	100.80	S	Merkel Bros.—12—⅝" meters.
	7.51	S	Sundry supplies.
	44.00		Payroll—Ada Station.
	31.25	W	" —Gravity Springs.
	26.70	W	" —New Spring.
	22.50	S	" —Meter installation.
	5.00		Superior Supply Co.—Tools.
	13.42		" " " —Sundry Supplies.
	6.78	P	" " " —Lead.
August	1.50		" " " —Tools.
	.67	S	" " " —Supplies for Meter inst.
	7.40	S	Ga. Lbr. Co.—Brick and cement, meter inst.
	1.70		W. H. Harry Co.—Tools.
	1.06		" —Sundry supplies.
	88.80	S	Hersey Mfg. Co.—12—⅝" meters.
	7.00	R	E. L. Bowman—Recording deeds.
	1.70		Sundry tools.
	3.51		" supplies, meter installation.
	32.10	P	Payroll—Laying mains.
	2.46	S	" —making taps.
	5.77	S	" —meter installation.
	4.00	W	" —Gravity Springs.
	16.00	W	" —New springs.
	11.60		" —Ada Station.
Sept.	8.55	P	Superior Supply Co.—Hemp and lead.
	2.10	S	" " " —Fitting for meter inst.
	41.25	S	" " " —Meter tops and rings.

	50.42	P	Payroll—Laying mains.
	62.95	P	" —Relaying mains.
	11.40	P	" —Unloading pipe.
1004			
Sept.	$5.25	F	W. F. Deitz—20 gallon tank.
	.95		W. H. Harry—Tools.
	792.84	P	Lynchburg Foundry Co.—3,000'—4" pipe.
	16.03	S	H. Mueller Co.—Brass goods and corporation cocks.
	63.69	P	N. & W.—freight on pipe.
October	3.76		Sundry Tools.
	180.00	R	A. W. Reynolds—Examination & preparation of deeds.
	121.18	B	D. H. Bird—Lumber for new Beaver Pond Station.
	18.00	P	Superior Supply Co.—Lead for relaying.
	4.26		" " " —Fittings, etc.
	60.29	P	" " " —506'—1½" pipe & fittings.
	139.80	B	" " " —sheet metal, etc. for Beaver Pond Station.
	46.40	P	Payroll—Laying mains.
	607.25	B	" —New Beaver Pond Station.
	64.70	P	" —Relaying mains.
	19.75	S	" —meter installation.
Nov.	1.05	S	Sundry Supplies—meter installation.
	62.68	B	Ga. Lbr. Co.—Lumber for new Beaver Pond Sta.
	3.25		Sundry tools.
	8.00	P	Payroll—Laying mains.
	200.00	M	Superior Supply Co.—60' stack for Beaver Pond Station.
	12.00	S	Payroll—Meter Installation.
	211.38	B	Superior Supply Co.—Roofing, etc. for new Beaver Pond Station.
Dec.	104.15	S	Merkel Bros.—12—⅝" meters.
	.75	S	Sundry expense—meter installation.

1910—Plant Account.—*Continued.*

Month	Amount.	Acct.	Description.
	1.05	S	N. & W. R. R.—freight on meters.
	.85		South Express Co.—Express on fittings.
	21.93	B	Ga. Lbr. Co.—Millwork for new Beaver Pond Sta.
	16.75		Payroll—Laying mains.
	700.00	R	Thos. P. Morgan—Springs *Bos.* 12-13-14—1.23 A.
July	500.00	R	R. H. Bailey—Spring No. 16— 1.06 acres.
	925.00	R	B. P. Wilson — " " 17— 1.99 "
	1,200.00	R	W. T. Bailey — " " 18—41.88 "
	150.00	R	J. W. Wilson—right-of-way Ada Spring line.
	$8,636.85		
	364.15		Deduct for materials sold to City, Companies and individuals.
	$8,272.70		Total.

1005

1910—Income.

Month.	Amount.	Description.
	$9,326.72	Flat Rate Services.
	20,656.76	Metered Services.
	1,500.00	Fire Hydrant Rental.
	45.00	Rent from Bailey Farm.
	$31,528.48—Total.	

1910—Operation.

Month.	Amount.	Description.
Jan.	$9.53	Bluefield Feed Co.—Feed.
	11.30	Mr. Nickerson—R. R. Fare to Bluefield.
	13.65	Citizens Coal & Supply Co.—Coal.
	55.84	Domestic Fuel Co.—2 carloads coal.
	16.75	Daily Telegraph & Printing Co.—Paper, car..., etc.
	3.30	Sundry office supplies.
	51.54	N. & W.—freight on coal.
	80.49	A. W. Bailey—Hauling Coal.
	2.00	East End Pharmacy—Test Tubes.
	60.00	Payroll—Inspection.
	140.61	" —Pumpers.
	3.50	" —Hauling Coal.
	14.84	Standard Oil Co.—Oil.
	26.70	Sanders & Crockett—Legal Expense N. H. McClaugherty case.
Feb.	11.29	Bluefield Feed Co.—Feed.
	59.32	Domestic Fuel Co.—2 carloads coal.
	3.50	Flat Top Book & Stationery Co.—Supplies.
	1.65	W. H. Harry—Sundry Supplies.
	15.70	B. C. McLain—Traveling Expenses.
	5.75	Sundry office expense.
	59.31	N. & W.—freight on coal.
	5.00	" Privilege of maintaining 6" line across right-of-way for one year.
	25.00	Associated Charities—Charity.
	159.04	Payroll—Pumping.
	5.00	" —Hauling coal.
	60.00	" —Inspection.

1910—Plant Account.—*Continued.*

1910—Operation.—*Continued.*

Month.	Amount.	Description.
Feb.	$35.99	Sundry office expense—Phone, light. stamps, etc.
	1.50	" stable expenses.
	20.00	Bradley McHara—Traveling Expenses.
	13.50	Ritz & Ritz—Legal Costs.
March	5.28	Bluefield Feed Co.—Feed.
	34.74	Sundry office expenses.
	2.50	Legal Expense.
	33.75	Daily Telegraph & Printing Co.—Office Supplies.
	4.38	Flat Top Grocery Co.—Dust Absorbant.
	150.00	H. B. Hayes—Audit 1909.
	5.00	N. & W. Private maintaining 6" line on right-of-way.
	60.00	Payroll—Inspection.
	114.26	" —Pumpers.
	344.46	Sanders & Crockett—Legal Expense various cases.
April	16.49	Bluefield Feed Co.—Feed.
	43.16	Sundry office & laboratory expense.
	57.07	Domestic Fuel Co.—2 carloads coal.
	24.85	Eimar & Amend—Chemicals.
	80.40	W. McCarthy—Traveling Expenses to La Crosse, Wis.
	2.55	Sundry office expense.
	62.08	N. & W. R. R.—Freight on coal.
	60.00	Payroll—Inspection.
	95.67	" —Pumping.
	8.25	" —Labor on coal.
	12.61	Standard Oil Company—Oil.

May	22.68	Sundry office expense.
	6.25	" legal expense.
	75.44	Domestic Fuel Co.—3 carloads coal.
	9.65	Bluefield Feed Co.—Feed.
	17.93	Traveling and office expense.
	60.00	Payroll—Inspection.
	85.80	" —Pumpers.
	7.50	" —Labor on coal.
	14.00	" —Legal Expense.
	38.51	U. S. Internal Revenue Tax on Net Income.
June	34.54	Sundry office expense.
	75.00	Daily Telegraph & Printing Co.—Postals, envelopes—etc.
	7.49	Superior Supply Co.—Gaskets and packing.
	89.16	N. & W.—Freight on coal.
	75.00	Payroll—Inspection.
	64.34	" —Pumping.
	9.68	Standard Oil Co.—Oil.
	120.00	State of West Virginia License Tax.
	36.65	W. McCarthy—Trip to Philadelphia.
	3.65	Legal Expense—Clark Costs.
	.40	Office "
	9.67	Bluefield Feed Co.—Feed.
1007		
July	$6.69	Bluefield Feed Co.—Feed.
	3.25	Curtis-Pearson Co.—Stationery.
	9.75	Daily Telegraph & Printing Co.—Letterheads, etc.
	150.00	W. A. Glasgow—Legal Expense retaining fee.
	1.50	Sundry stable expense.
	24.40	" office "

1910—Plant Account.—*Continued.*

1910—Operation.—*Continued.*

Month.	Amount.	Description.
	10.50	City of Bluefield—License Tax.
	75.00	Payroll—Inspection.
	98.49	" —Pumping.
	150.00	Sanders & Crockett—Legal expense McClaugherty case.
	9.25	Stone Printing Co.—3 meter reading books.
August	16.97	Superior Supply Co.—Waste and Packing.
	8.06	Standard Oil Co.—Oil.
	40.00	E. H. Easley—Plumbers Bonds.
	13.42	Bluefield Feed Co.—Feed.
	2.85	Sundry office expense.
	250.50	Ritz & Ritz—Legal Expense in Brewery Co. Case.
	27.31	Sundry office expense.
	5.00	Legal Expense—Brewery Co. Case.
	75.00	Payroll—Inspection.
	181.24	" —Pumping.
	24.00	" —Legal Expense Brewery Co. Case.
Sept.	31.87	Sundry office expense.
	3.72	Superior Supply Co.—Packing.
	75.00	Payroll—Inspection.
	195.00	" —Pumping.
	4.25	Sundry office expense.
	23.99	Daily Telegraph & Printing Co.—Bills, forms, etc.
October	27.41	Sundry office expense.
	200.00	A. W. Reynolds—Fee in McClaugherty suits.
	22.50	Daily Telegraph & Printing Co.—Reports of Bills, postals, etc.

	59.13	Flat Top Fuel Co.—Coal.
	34.96	N. & W.—freight on coal.
	13.88	Sundry office and stationery expense.
	4.55	Ritz & Ritz—Legal Expense.
	56.18	Standard Oil Co.—Oil.
	58.70	Sanders & Crockett—Sundry Legal Expense.
	75.00	Payroll—Inspection.
	207.72	" —Pumping.
1008		
Nov.	$27.71	Sundry office expense.
	200.00	J. M. Sanders—retainer fee.
	3.35	Sundry office expense.
	75.00	Payroll—Inspection.
	20.74	Standard Fuel & Supply Co.—Feed.
	98.84	Flat Top Fuel Co.—Coal.
	33.40	Citizens Coal & Supply Co.—Coal.
	11.28	Indiana Refining Co.—Oil.
	7.80	Standard Oil Co.—Oil.
	5.60	Curtis Pearson Co.—office supplies.
Dec.	1,825.14	Auditor of West Virginia Taxes—Pipe Line.
	8.00	Flat Top Book & Stationery Co.—Stationery.
	45.45	Flat Top Fuel Co.—Coal.
	25.50	Daily Telegraph & Printing Co.—Bills, letterheads, etc.
	30.65	W. McCarthy—Expense to Philadelphia.
	2.10	Sundry office expense.
	51.60	Sundry office expense,—light, phone, stamps, etc.
	95.82	N. & W. R. R.—Freight on coal.
	75.00	Payroll—Inspection.
	160.42	" —Pumping.

1910—Plant Account.—*Continued.*

1910—Operation.—*Continued.*

Month.	Amount.	Description.
	7.00	Payroll—Office expense.
	3.75	" —Coal at Ada.
	1,800.00	W. McCarthy—salary.
	1,500.00	A. L. Rhoads— "
	70.00	B. C. McLean— " January.
	410.00	J. B. Nickerson " February to July Inclusive.
	110.83	Glenne Woodyard " Sept. 26 to December "
	$12,034.46	
	1,350.00	Philadelphia office salaries charged.
	150.00	" " rent charged.
	$13,534.46	Total.

1009

1910—Maintenance.

Jan.	$14.65	Georgia Lumber Co.—Lumber for office.
	8.73	W. H. Harry Co.—Hardware for office.
	136.06	Payroll—Pipe line maintenance.
	13.00	" —Ada Station "
	4.00	" —Office "
	30.80	" —Beaver Pond "
	6.43	" —Gravity Springs "
	.55	Superior Supply Co.—Fittings for Ada Pump.

	7.74	" " " " for Beaver Pond pump.
	5.78	" " " —Supplies for Pipe line.
Feb.	2.38	Georgia Lumber Co.—Window Stops.
	4.03	" " " —Lumber for Ada Station.
	1.67	" " " " " Beaver Pond Station.
	51.26	Superior Supply Co.—Grate Bars.
	17.88	W. H. Harry Co.—Hardware & Supplies for office bldg.
	21.60	Snow Pump Co.—Freight on old pump parts.
	2.80	Sundries for Beaver Pond.
	139.91	Payroll—Pipe Line maintenance.
	68.65	" —Ada Station "
	231.70	" —Beaver Pond Sta. "
	23.00	" —Office repair "
	3.63	Sundry repairs for Ada Station.
	21.00	C. B. Whitlow—Papering 2 rooms at office.
March	15.00	Buffalo Meter Co.—Repair parts.
	36.88	Sundry station repairs.
	18.35	Enterprise Co.—Repairs to Ada Pump.
	3.90	Georgia Lumber Co.—cement, & brick-pipe line repair.
	.56	" " " —lumber for scaffold to paint tanks.
	6.32	" " " " " office repair.
	.60	W. H. Harry—Repair Supplies Ada Pump.
	90.00	Corbin & Goodrich—Boiler insurance.
	133.75	Payroll—pipe line maintenance.
	6.00	" —meter "
	38.25	" —tank "
	109.03	" —Ada Station "
	16.40	" —Gravity Springs "
	19.00	" —Office Building "

1910—Plant Account.—*Continued.*

1910—Maintenance.—*Continued.*

Month.	Amount.	Description.
	29.38	Superior Supply Co.—Disc, packing, fittings and labor on Ada Pump.
	4.50	" " " —Gaskets for tanks.
April	2.26	Sundry repair expense.
	11.00	National Meter Co.—Repair pa-ts.
	140.18	Payroll—Pipe line maintenance.
	190.00	" —Ada Station "
	8.75	" —Gravity Springs "
	3.50	" —Meter "
	29.06	Superior Supply Co.—Packing, etc. for Ada Pump.
1010		
May	$2.18	Sundry repair supplies.
	1.20	" pipe line repair supplies.
	23.60	" office repair "
	120.83	Payroll—Pipe line maintenance.
	18.25	" —Ada Station "
	8.00	" —Meters "
	8.75	" —Gravity Springs "
	4.00	" —Office "
	424.27	Snow Pump Co.—Repair parts & Labor on Ada Pump.
	1.40	Superior Supply Co.—Air Cocks for Ada Pump.
June	10.00	Georgia Lumber Co.—Lumber for office repair.
	38.00	National Meter Co.—Pistons, rollers, etc.
	7.00	Neptune Meter Co.—Gear trains and registers.

	122.35	Payroll—Pipe line maintenance.
	21.75	" —Gravity Springs "
	8.00	" —Ada Pump "
	2.00	" —Office "
	1.20	Pittsburgh Meter Co.—repair parts.
July	4.41	W. H. Harry Co.—Supplies for office repairs.
	2.12	" " " " Gravity Springs repair.
	9.25	National Meter Co.—Repair Parts.
	135.58	Payroll—Pipe line maintenance.
	23.38	" —Meters "
	27.25	" —Gravity Springs "
	6.00	" —Pumping Station "
	1.50	Superior Supply Co.—Supplies for meter repair.
	5.61	" " " " for pipe line "
	1.05	Thomsoon Meter Co.—Repair parts.
August	136.08	Georgia Lumber Co.—Brick and cement, Beaver Pond.
	2.85	W. H. Harry—Supplies for office repair.
	5.86	Sundry office expense.
	148.00	Redford Brick Co.—20,000 brick for Beaver Pond.
	18.00	N. & W.—freight on brick.
	3.30	Bluefield Hardward Co.—Supplies for Gravity Springs maintenance.
	4.70	Sundry repairs—Pump Stations.
	122.98	Payroll—Pipe line maintenance.
	20.25	" —Gravity Springs "
	663.35	" —Beaver Pond Sta. "
	26.20	" —Office "
Sept.	13.23	Superior Supply Co.—Grate Bar, Fittings, etc.
	7.72	" " " —Pipe and fittings.

1910—Plant Account.—*Continued.*

1910—Maintenance.—*Continued.*

Month.	Amount.	Description.
	172.36	Payroll—Pipe line maintenance.
	6.00	" —Gravity Springs "
	150.15	" —Beaver Pond "
1011		
Sept.	$18.75	Citizens Coal & Supply Co.—12 cu. yds. sand Beaver Pond.
	19.00	Georgia Lumber Co.—Lime and Fire Clay Beaver Pond.
	12.08	" " " —Lumber for Pipe line maintenance.
	4.00	W. H. Harry Co.—Supplies for Beaver Pond repair.
	1.86	" — " " pipe line repair.
October	118.40	Georgia Lumber Co.—Lime, fire brick & Clay Beaver P.
	7.25	Sundry repairs for stations.
	4.06	Superior Supply Co.—Gaskets for Ada Pump.
	100.15	Payroll—Pipe line maintenance.
	4.00	" —Meter "
	4.00	" —Office "
	4.00	" —Ada Station "
Nov.	3.00	Sundry repairs—Beaver Pond.
	3.25	" " " "
	72.62	Longacre & Ewing—Boiler insurance 1911-13 inc.
	140.46	Payroll—Pipe line maintenance.
	305.65	" —Beaver Pond "
	9.00	" —Meter "
	7.00	" —Gravity Springs "

	25.75	" —Ada Station "
	18.25	" —Office "
	14.60	Snow Pump Co.—Repairs to pump.
	11.01	National Meter Co.—Repair parts.
Dec.	16.50	Fisher Belting Co.—Belt for Ada Pump.
	3.75	Citizens Coal & Supply Co.—Sand.
	106.58	Payroll—Pipe line maintenance.
	86.45	" —Beaver Pond "
	8.00	" —Gravity Springs "
	17.00	" —Ada Station "
	21.63	" —Meter "
	$5,257.91	Total.

1012 Résumé of Plant Account, Income, and Operation for 1910.

Cost of Plant and Property incurred prior to 1910...	$311,304.55
" " " " " " during year....	8,272.70
Total cost of Plant and Property at end of year	$319,577.25
Income from Service during Year.....	$31,528.48
Expenditure for Operation during year. $13,534.46	
" " Maintenance " " 5,257.91	
Total Expenditure for Operation and Maintenance during year	18,792.37
Net Return Applicable to Depreciation, Interest and Dividends	$12,736.11

Résumé of Interest and Dividends for 1910.

Interest Paid on Loans from J. M. Wirgman and Stockholders	$1,215.00
Dividends for Year	7,560.00
Amount Withdrawn for Interest and Dividends in 1910.	$8,775.00

1013 1911.

The extension work on the distribution system included the installation of two fire hydrants, the cost of which was collected from the city. A small amount of mains were relaid during the year.

Additional preliminary work was done in connection with the Springs Nos. 12, 13, 14, 16, 17 and 18, for which the land had been purchased in 1910. In February 2.888 acres of land was purchased from J. T. Bailey, which added to the original tracts for Springs Nos. 3 and 4. New pipe collecting lines were installed for these two springs.

The office building was improved by the erection of an addition to same.

Of the total revenue for the year, 4.4% was derived from fire hydrant rental; 30.7% from flat rate consumption, and 64.9% from metered consumption. A rental of $50 which the company received from the tenants of the Bailey farm has been included in the total income.

A dividend of 4% amounting to $10,080 was declared for the year 1911.

1014

1911—Plant Account.

Month.	Amount.	Acct.	Description.
Jan.	$2.30		W. H. Harry—Tools.
	10.22		1908 Taxes on Lester Tract.
	3.25		Sundry Tools.
	53.20	S	Merkel Bros.—Service Fittings.
	336.00	S	National Meter Co.—6-2" meters and fish traps.
	18.00	P	Payroll—Laying Mains.
	65.70	W	" —New Springs.
	62.25	P	" —Relaying mains.
	15.19		Sundry supplies.
	6.42		Superior Supply Co.—Tools.
	5.46	P	" " " —Lead.
	50.37	W	" " " —½" pipe for new springs.
	6.58	P	" " " —Lead, fittings, etc.
Feb.	102.83	S	Merkel Bros.—Service fittings.
	69.05	W	N. & W.—freight on sewer pipe.
	2.20	S	" — " " meter fittings.
	28.90	P	Payroll—Laying mains.
	72.05	P	" —Springs.
	46.53	P	" —Meter installation.
	8.00		" Hauling, etc.
	87.75	S	Robinson Clay Products Co.—192 pcs. 18" ring pipe.
	2.35		Sundry tools.
	4.20	P	" supplies for laying mains.
	17.40	P	Rensselaer Valve Co.—8" check valve.
	2.40		Superior Supply Co.—Tools.
	28.08	W	" " " —Pipe, nipples, etc., Springs.
	10.50	S	Standard Meter Co.—1⅝" meter.

1911—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
	7.93		M. G. Whitlow—Tools.
	.80		" —Supplies for meter installation.
	193.46		Town of Pearisburg—Supplies.
March	9.90	W	R. F. Baker—6 yds. stone for gravity springs.
	3.50	W	Citizens Coal & Supply Co.—2 cu. yds. sand.
	15.00	F	Curtis-Pearson Co.—Pigeon Hole Case.
	50.00		Electric Specialty Mfg. Co.—Pipe locator.
	905.66	P	Lynchburg Foundry Co.—360'—8", 1,800'—6" pipe.
	81.75	P	McGraw Yarborough Co.—Lead and Oakum.
	12.25	E	W. H. Ford—Working on pipe line atlas.
	12.63	P	Payroll—Laying mains.
	105.95	W	" —Gravity Springs.
	7.19	P	N. & W.—freight on lead and oakum.
	30.17	P	Superior Supply Co.—Galvaized pipe and fitting.
	12.90	W	" " " —Cement and pipe.
	15.48	P	" " " —lead and fittings.
	8.30		" " " —Tools.
1015			
April	$20.50		Bluefield Hardware Co.—Tools.
	3.50		Burgess Electric Co.—Dry Batteries.
	4.23	P	N. & W.—Freight on pipe.
	11.51	S	" " " meters.
	.75		W. H. Harry—Tools.
	1.70	P	" —Pipe line material.
	100.00		National Meter Co.—1 testing outfit.
	630.00	S	" " " —75⅝" meters.

	26.00	W	Payroll—New Springs.
	189.15	P	" —Relaying mains.
	25.61	P	" —Unloading pipe.
	3.76	S	" —Meter installation.
	67.20	P	Rensselaer Valve Co.—6-6" valves.
	7.00		Superior Supply Co.—Tools.
	4.94	P	" " " —½" pipe and fittings.
	38.40		Water Works Equipment Co.—#1 Ellis pipe cutter.
May	14.03	W	Bluefield Hardware Co.—Fencing for Gravity Spring.
	6.25		" " " —Tools.
	2.71	S	" " " —Supplies for meter inst.
	2.52		Sundry materials.
	48.29	W	Georgia Lumber Co.—Lumber and cement for springs.
	11.20		W. H. Harry—Tools.
	.76		" —Materials.
	30.00	R	A. W. Reynolds—Abstract and deed—J. T. uley.
	144.21	P	Payroll—Relaying mains.
	38.00	S	" —Meter installation.
	39.00	W	" —Springs.
	21.00	B	Citizens Supply Co.—Sand for office Improvement.
	72.10	B	Ga. Lbr. Co.—Cement, Lumber, etc., " "
	1.65	B	W. H. Harry—Supplies " "
	201.60	B	Payroll " "
	2.17	B	Materials " "
	2.60	W	Superior Supply Co.—Steel for springs.
	12.95		" " " —Tools.
	65.85	S	" " " —Meter tops and rings.
	15.51	B	" " " —Steel and cement off. impvt.
	3.66	P	" " " —102'—½" galvanized pipe.
June	16.01	B	Burgess Electric Co.—Wiring office improvement.

1911—Plant Account.—*Continued.*

Month.	Amount.		Description.
	10.50	B	Citizens Coal & Supply Co.—6 yds. sand off. "
	4.60	S	South Express Co.—Express on meters.
	51.75	B	Sundry Costs—Office Improvements.
	83.20	B	Ga. Lbr. Co.—Lumber, plaster, cement, etc., off. bldg.
	3.71	B	W. H. Harry Co.—Materials for office Improvement.
	1.31		" —Materials.
1016			
June	$40.00	P	N. & W.—Freight on paving brick.
	10.00	B	H. L. Withers—Plastering, office improvements.
	33.60	S	National Meter Co.—2 1" meters.
	197.13	P	Payroll—Laying mains.
	62.30	S	" —Meter installation.
	43.89	S	Superior Supply Co.—Meter tops and rings.
	13.08	B	" " " —Black pipe and steel office improvements.
	31.33	P	" " " —Galv. pipe and fittings.
	52.00	P	Peebles Paving Brick Co.—4,000 brick.
July	9.00		Bluefield Hardware Co.—Tools.
	4.75	B	" Tinning & Plumbing Co.—Gutters off. bldg.
	.60	S	Express on meters.
	26.26	B	Ga. Lbr. Co.—Lumber and millwork office bldg.
	5.40		W. H. Harry—Tools.
	4.62	P	" —Explosives, etc.
	224.13	P	Payroll—Laying mains.
	14.00	S	" —Meter installation.
	211.00	W	" —Gravity Springs.
	4.00	B	" —Office Improvements.

	77.38	P	Superior Supply Co.—Galvanized pipe and fittings.
August	85.47	W	Bluefield Hardware Co.—Explosives and fencing.
	114.45	P	" " " —Galv. pipe and fittings.
	2.00		" " " —Tools.
	3.35		Tools.
	1.41		Sundry supplies.
	55.30	W	Ga. Lbr. Co.—4" sewer pipe for springs.
	4.62		W. H. Harry—Tools and supplies.
	4.50	S	O. V. Hefner—6 ½" curb stops.
	209.50	P	Payroll—Laying mains.
	1,220.38	W	" —Gravity Springs.
	126.17	P	Superior Supply Co.—Galvanized pipe and fittings.
	2.10		" " " —Tools.
	42.69	S	" " " —Meter tops and rings.
	24.83	M	" " " —Ejector, valves, etc. B. Pond.
Sept.	95.16	B	Bluefield Hardware Co.—Sheet metal for Beaver "
	11.90	P	" " " —1½" galvanized pipe.
	8.16	W	" " " —Explosives.
	14.80	F	" Telephone Co.—1 Telephone at Ada.
	10.91	B	Ga. Lbr. Co.—Lumber for Beaver Pond Station.
	64.80	W	" —960'—4" sewer pipe.
	2.30		W. H. Harry—Tools.
	7.00		Hawley Merchandise Co.—Boots.
1017			
Sept.	$.92	S	N. & W.—freight on Bibb cocks.
	70.60	S	H. Mueller Co.—Service Supplies.
	3.45	S	N. & W.—freight on meters.
	3.50		Sundry tools.

1911—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
	348.55	W	Payroll—Gravity Springs.
	191.65	P	" —Laying mains.
	218.40	S	Pittsburgh Meter Co.—24 5/8" meters.
	65.41	P	Superior Supply Co.—Lead, galv. pipe and fittings.
October	3.15		Bluefield Hardware Co.—Tools.
	6.75	P	" " " —Galvanized pipe.
	16.90	W	Georgia Lumber Co.—sewer pipe.
	2.40		W. H. Harry—Tools.
	2.83		" —Materials.
	10.90	P	Lynchburg Foundry Co.—Specials.
	1.50		M. G. Whitlow—Tools.
	175.00	W	Payroll—Gravity Springs.
	195.83	P	" —Laying mains.
	3.50	S	" —Meter installation.
	8.78		Sundry tools and supplies.
	156.76	P	Superior Supply Co.—Galvanized pipe and fittings.
	2.85		" " " —Tools.
	46.47		" " " —Lead and meter tops and rings.
November	77.06	P	Bluefield Hardware Co.—galvanized pipe.
	13.54	P	Georgia Lumber Co.—Lumber.
	2.63	W	" " " —Cement, gravity springs.
	122.65	P	Superior Supply Co.—Galvanized pipe and lead.
	10.74	W	" " " —Lead—Gravity Springs.
	3.08		" " " —Fittings.
	162.00	P	Payroll—Laying mains.
	79.80	W	" —Gravity Springs.

	4.90		Sundry tools.
	4.25		" materials.
December	20.38	B	Bluefield Gas & Power Co.—Gas fixtures.
	29.13		" Hardware Co.—Tools.
	18.05	W	" " " —Explosives Gravity Springs.
	5.45	P	" " " —Galvanized pipe.
	.90	B	" " " —Hardware for office.
	25.38	B	Georgia Lumber Co.—Lbr. & Millwork for office.
	12.00	B	W. H. Harry Co.—Hardware for office.
	4.40		" " —Tools.
	6.75		H. Mueller Co.— "
	207.62	S	Pittsburgh Meter Co.—25 5/8" meters.
1018			
December.	$73.40	W	Payroll—Gravity Springs.
	87.15	P	" —Laying Mains.
	7.33		Sundry materials.
	24.59	S	Superior Supply Co.—Meter boxes and rings.
	5.89	S	" " " —Pipe and fittings.
	10.61	P	" " " —Galvanized pipe.
February.	1,000.00	R	J. T. Bailey—2.8888 A. additional lands for Spgs. 3 & 4.
January.	75.00	R	A. B. Helton—Right-of-way-Ada Spring line.
	$11,440.29		
	247.65		Deduct for materials sold City, Companies and individuals.
	$11,192.64		Total.

1911—Plant Account.—*Continued.*

1911—Income.

Month.	Amount.	Description.
	$10,973.13	Flat Rate Services.
	23,179.86	Metered Services.
	1,575.00	Fire Hydrant Rental.
	50.00	Rent from Bailey Farm.
	$35,777.99	Total.

1911—Operation.

January.	$3.16	Sundry office expense.
	17.40	Daily Telegraph & Printing Co.—Postals, bills, etc.
	41.50	Indian Refining Co.—Oil.
	37.88	N. & W.—Freight on coal.
	19.80	" " " "
1019	49.23	State, County and District Taxes.
	6.60	Sundry office expense.
January.	$75.00	Payroll—Inspection.
	116.98	" —Pumping.
	3.25	" —Coal at Ada.
	24.25	" —Office Expense.
	45.68	Pocahontas Coke Company—Coal.
	28.57	Sundry office expense.
	10.11	Standard Fuel & Supply Co.—Feed.
February.	12.00	Daily Telegraph & Printing Co.—Bills and postals.
	150.00	H. B. Hoyes Co.—Audit 1910.
	5.75	Sundry office stationery.

	75.00	Payroll—Inspection.
	99.28	" —Pumping.
	9.25	" —Office Expense.
	22.25	Sundry office expense.
	10.31	Standard Fuel & Supply Co.—Feed.
March.	11.00	Citizens Coal & Supply Co.—Coal.
	1.40	Office expense.
	1.70	Curtis-Pearson Co.—Daybook and pens.
	11.50	Daily Telegraph & Printing Co.—Postals, etc.
	96.57	Flat Top Fuel Co.—2 carloads coal.
	1.25	Office expense.
	69.76	N. & W.—freight on coal.
	5.00	" —Permit to maintain 6" main—1911.
	75.00	Payroll—Inspection.
	95.14	" —Pumping.
	9.25	" —Office expense.
	9.68	Standard Fuel & Supply Co.—Feed.
	1,000.00	Sanders & Crocket—Legal costs city case.
April.	23.29	Sundry office expense.
	37.20	James S. Clarke—Legal expense Lester case, Transcript.
	2.14	Office expense.
	12.50	Daily Telegraph & Printing Co.—1,000 postals 2 sides.
	48.78	Flat Top Fuel Co.—1 carload coal.
	.40	W. H. Harry—Office expense.
	108.99	N. & W. R. R.—freight on coal.
	25.80	W. McCarthy—Traveling expense to Charleston and return.
	75.00	Payroll—Inspection.
	81.32	" —Pumping.
	5.75	" —Office expense.
	3.42	Superior Supply Co.—Packing, etc.

1911—Plant Account.—*Continued.*

1911—Operation.—*Continued.*

Month.	Amount.	Description.
	8.77	Standard Fuel & Supply Co.—Feed.
	50.02	U. S. Excise Tax.
1020		
May.	$25.55	Sundry office expense.
	4.00	Daily Telegraph & Printing Co.—Subscription.
	22.77	" " " " Co.—Postals, bills, etc.
	150.57	Flat Top Fuel Co.—3 carloads coal.
	250.00	A. W. Reynolds—Fee in city case.
	75.00	Payroll—Inspection.
	124.04	" —Pumping.
	120.00	State of West Virginia—License Tax.
	1.25	Sundry office expense.
	34.53	N. & W.—freight on coal.
	16.67	Bluefield Fuel & Supply Co.—Feed.
June.	6.10	Curtis-Pearson Co.—Envelopes.
	1.79	Sundry office expense.
	102.01	W. B. Honaker—Legal Costs—Lester case.
	21.91	Sundry office expense.
	1.50	" Stationery expense.
	12.50	Daily Telegraph & Printing Co.—Postals.
	46.31	Flat Top Fuel Co.—1 carload coal.
	150.00	W. A. Glasgow—Retainer Fee.
	111.40	N. & W.—freight on coal.
	33.80	" — " " "
	75.00	Payroll—Inspection.

	210.98	" —Pumping.
	10.48	Standard Fuel & Supply Co.—Feed.
	29.00	Sanders & Crockett—Legal expense—Joling case.
	5.61	Paragon Refining Co.—Oil.
July.	14.05	Castner, Curran & Bullitt—Coal.
	25.50	Citizens Coal & Supply Co.—Coal.
	33.86	Sundry office and stable expense.
	17.00	Daily Telegraph & Printing Co.—Printing postals.
	132.00	Flat Top Fuel Co.—3 carloads coal.
	6.60	Indian Refining Co.—Oil.
	9.65	Paragon Refining Co.—Oil.
	75.00	Payroll—Inspection.
	295.20	" —Pumping.
	196.00	" —Hauling coal to Beaver Pond.
	7.79	Standard Fuel & Supply Co.—Feed.
August.	21.55	Sundry office expense.
	10.50	City of Bluefield—License Tax.
	10.93	Sundry stable expense.
	8.00	Citizens Coal & Supply Co.—Coal.
	4.31	Sundry office expense—
	41.83	Castner, Curran & Bullitt—2 carloads coal.
1021		
August.	$16.50	Daily Telegraph & Printing Co.—Postals, Bills, etc.
	79.48	Flat Top Fuel Co.—2 carloads coal.
	9.80	Home Grocery Co.—Feed.
	.95	" " " —Office expense.
	.65	" " " —Oil.
	96.24	N. & W.—freight on coal.
	71.62	" " " "

1911—Plant Account.—*Continued.*

1911—Operation.—*Continued.*

Month.	Amount.	Description.
	75.00	Payroll—Inspection.
	320.00	" —Pumping.
	132.40	" —Hauling Coal.
	29.22	Paragon Refining Co.—Oil.
	15.00	Stone Printing Co.—6 meter reading books.
	23.00	Sanders & Crockett—Printing brief in Jopling case.
September.	228.77	Citizens Coal & Supply Co.—Coal.
	18.00	Daily Telegraph & Printing Co.—Postals and bills.
	25.25	Flat Top Fuel Co.—Coal.
	11.53	Home Grocery Co.—Feed, etc.
	41.34	N. & W.—freight on coal.
	43.25	Wm. Mann & Co.—5 register books.
	28.10	Sundry office expense.
	75.00	Payroll—Inspection.
	303.29	" —Pumping.
	180.40	" —Hauling coal.
	17.05	Sanders & Crockett—legal expense Lester case.
October.	7.50	American Surety Co.—W. H. Trial bond.
	22.73	Castner, Curran & Bullitt—Coal.
	94.94	Citizens Coal & Supply Co.—Coal.
	14.00	Daily Telegraph & Printing Co.—Postals, Bills, etc.
	40.00	E. H. Easley—Plumber's bonds.
	90.64	Flat Top Fuel Co.—2 carloads coal.
	14.77	Home Grocery Co.—Feed, etc.
	6.60	Indian Refining Co.

	95.00	N. & W.—freight on coal.
	2.00	Sundry office expense.
	75.00	Payroll—Inspection.
	242.57	" —Pumping.
	70.40	" —Hauling coal.
	32.70	A. L. Rhoads—Expenses to Philadelphia.
	24.84	Sundry office expense.
November.	5.50	Citizens Coal & Supply Co.—Coal.
	22.65	Castner, Curran & Bullitt—1 carload coal.
	48.00	Daily Telegraph & Printing Co.—Postals, Bills, etc.
	41.01	Indian Refining Co.—Oil.
1022		
November	$29.45	N. & W.—Freight on coal.
	75.00	Payroll—Inspection.
	178.98	" —Pumping.
	22.51	Sundry office expense.
	200.00	J. M. Sanders—Retainer Fee.
December	1,884.00	State of West Virginia—Pipe Line Tax.
	2.05	Office Expense.
	37.46	Castner, Curran & Bullitt—Coal.
	8.25	Citizens Coal & Supply Co.— "
	5.70	Curtis-Pearson Co.—Stationery.
	3.75	Daily Telegraph & Printing Co.—Envelopes.
	24.98	Home Grocery Co.—Feed.
	10.59	Office Lot Tax.
	75.00	Payroll—Inspection.
	145.84	" —Pumping.
	5.25	" Office Expense.
	20.00	A. W. Reynolds—legal Expense.

1911—Plant Account.—*Continued.*

1911—Operation.—*Continued.*

Month.	Amount.	Description.
	32.99	Sundry office expense.
	10.22	Tax on Mary Lester Tract.
	1,800.00	W. McCarthy —Salary.
	1,500.00	A. L. Rhoads "
	420.00	Glenna Woodyard "
	$14,425.29	
	100.00	Deduct refund by City Recorded on W. McCarthy's fine of 9/24/08.
	$14,325.29	
	1,350.00	Philadelphia office salaries charged.
	150.00	" " Rent "
	$15,825.29—Total.	

1911—Maintenance.

January	$4.48	W. H. Harry—Sundry Maintenance Supplies.
	5.00	Sundry Maintenance Supplies Ada Springs.
	105.56	Payroll—Pipe Line Maintenance.
	13.07	" —Meter "
1023		
January	$3.00	Payroll—Gravity Springs Maintenance.
	23.20	" —Ada Pump "
	10.03	" —Beaver Pond Pump "

	14.00	Snow Pump Co.—valve gear.
February	4.03	Superior Supply Co.—Repair Supplies.
	24.55	Eddy Valve Co.—Repair parts.
	5.15	Ga. Lbr. Co.—Lumber for office repair.
	101.11	Payroll—Pipe Line Maintenance.
	8.75	" —Meter "
	8.00	" —Ada Station "
	4.00	" —Spring "
	1.88	Sundry meter repair parts.
	4.58	Superior Supply Co.—Repairs to Pumps.
March	142.33	Payroll—Pipe Line Maintenance.
	13.25	" —Gravity Springs "
	6.00	" —Meter "
	4.00	" —Ada Station "
	16.12	Longacre & Ewing—Insurance on Beaver Pond, 1911.
	4.90	Pittsburgh Meter Co.—Repair parts.
April	35.34	Sundry office expense.
	.60	South Express Co.—Express on meter repair parts.
	.75	A. T. Newton—Sharpening saws.
	1.50	H. D. Torrence—Horseshoeing.
	1.52	W. H. Harry—Supplies for office repair.
	1.70	" — " " tank "
	111.88	Payroll—Pipe Line Maintenance.
	17.87	" —Meter "
	17.25	" —Gravity Springs "
May	124.78	" —Pipe Line "
	15.25	" —Gravity Springs "
	8.00	" —Meter "
	3.90	Superior Supply Co.—Gaskets for tanks.
June	4.25	Sundry repair materials.

1911—Plant Account.—*Continued.*

1911—Maintenance.—*Continued.*

Month.	Amount.	Description.
	13.10	National Meter Co.—Repair parts.
	137.28	Payroll—Pipe Line Maintenance.
	25.50	" —Gravity Springs "
	6.00	" —Ada Station "
	13.25	" —Meter "
	6.46	Superior Supply Co.—Pipe and gage glasses, Beaver P.
	12.14	" " " —Hose, bushing, etc., Ada Sta.
July	12.10	Citizens Coal & Supply Co.—Sand and cement Pipe Line.
	5.80	W. H. Coffman—Pipe line repair supplies.
	4.65	Ga. Lbr. Co.—cement for Pipe Line maintenance.
1024		
July.	$121.65	Payroll—Pipe Line Maintenance.
	10.00	" —Beaver Pond "
	41.00	" —Gravity Springs "
	7.33	" —Meter "
	7.63	Superior Supply Co.—Valves & rods Beaver P. pump.
August.	5.04	Sundry repair supplies.
	3.45	Georgia Lumber Co.—Fire clay for Beaver Pond.
	94.71	Payroll—Pipe Line Maintenance.
	6.00	" —Meter "
	47.50	" —Beaver Pond Sta. "
	4.00	" —Ada Station "
	23.62	" —Gravity Springs "

	193.51	Superior Supply Co.—Boiler tubes, valves, fittings, etc., in connection with overhauling Beaver Pond boilers and pump.
	7.08	Superior Supply Co.—Gaskets and packing—Ada pump.
September.	7.00	R. F. Baker—4 yds. Stone for Pipe Line Repair.
	3.90	Citizens Coal & Supply Co.—Sand for Pipe Line Repair.
	1.10	Georgia Lumber Co.—Cement for Pipe Line Repair.
	17.70	W. H. Harry—Sundry repair supplies.
	1.20	Meter repairs—freight.
	27.00	Neptune Meter Co.—Repair parts.
	30.25	National Meter Co.— " "
	97.83	Payroll—Pipe Line Maintenance.
	10.00	" —Gravity Springs "
	25.00	" —Beaver Pond "
	4.00	" —Meter "
	.85	
October.	1.75	Superior Supply Co.—Black pipe.
	6.55	Office Expense.
	84.84	Citizens Coal & Supply Co.—Sand and cement pipe Line repair.
	.53	Longacre & Ewing—Beaver Pond Insurance.
	.68	Georgia Lumber Co.—Cement Pipe Line Repairs.
	83.63	M. G. Whitlow—Sheet copper Beaver Pond Pipe Line Repair.
	25.00	Payroll—Pipe Line Maintenance.
	6.00	" —Gravity Springs "
	4.00	" —Beaver Pond Sta. "
	8.50	" —Meter "
	2.56	Superior Supply Co.—Smoke Stack for Office.
1025		" " " —Glasses and Gaskets Ada Pump.
November.	$1.75	Citizens Coal & Supply Co.—Sand Pipe Line Repair.
	6.00	Superior Supply Co.—Cement " " "

1911—Plant Account.—*Continued.*

1911—Maintenance.—*Continued.*

Month.	Amount.	Description.
	272.08	Payroll—Pipe Line Maintenance.
	10.00	" —Meter "
	8.00	" —Ada Station "
	26.25	" —Gravity Springs "
December.	132.03	" —Pipe Line "
	29.00	" —Gravity Springs "
	6.00	" —Ada Station "
	45.00	Hartford Company—Flywheel Insurance.
	4.10	Sundry meter repairs.
	4.04	Superior Supply Co.—Packing.
	$2,674.50—Total.	

1026 Résumé of Plant Account, Income, and Operation for 1911.

Cost of Plant and Property Incurred Prior to 1911		$319,577.25
" " " " " " during year		11,192.64
Total Cost of Plant and Property at end of year		$330,769.89
Income from Service during year		$35,777.99
Expenditure for Operation during year	$15,825.29	
" " Maintenance " "	2,674.50	
Total " " Operation and Maintenance during year		18,499.79
Net Return Applicable to Depreciation, Interest and Dividends		$17,278.20

Résumé of Interest and Dividends for 1911.

Interest Paid on Loans from J. M. Wirgman and Stockholders	$1,280.00
Dividends for Year	10,080.00
Amount Withdrawn for Interest and Dividends in 1911	$11,360.00

1027 1912.

There was but a small amount of new extension work on the distribution system in the year 1912, but a considerable amount of small cast iron and galvanized iron mains were taken up and relayed with cast iron pipe of a larger size. No fire hydrants were installed in 1912.

The actual development of Springs Nos. 12-13-14-16-17 and 18 for the purpose of supplying water, took place in 1912. It consisted of clearing, grubbing, and in some cases filling; laying of infiltration lines, the building of concrete basins, and superstructures of which those for No. 12-13-14 were of frame construction and those for the remaining springs of concrete construction.

Early in the year the office building was improved by the installation of electric, plumbing and heating fixtures. In November the building was destroyed by fire and the company temporarily located their office in the building of the Bluefield Telephone Co. until such time as a new building was erected.

Of the total income for the year 4.9% was derived from fire hydrant rental, 35.6% from flat rate consumption, and 59.5% from metered consumption. A rental of $55 which the company received from the tenants of the Bailey farm has been included in the total income.

A dividend of 2% amounting to $5,040 was declared for the year 1912.

Month.	Amount.	Acct.	Description.
January	$3.92	B	W. A. Bodell—Toilet Fixtures.
	15.17		Bluefield Hardware Co.—Tools.
	13.60	B	Burgess Electric Co.—Electric Fixtures.
	11.48	B	Georgia Lumber Co.—Lumber for office building.
	1.49	P	" " " — "
	2.85		W. H. Harry Co.—Tools.
	24.67	B	" —Hardware for office building.
	7.75		Sundry freights and materials.
	10.40	S	National Meter Co.—1—⅝" meter.
	349.63	S	Payroll—Springs.
	41.63	P	" —Laying mains.
	10.70		Sundry freights and materials.
	7.41	B	Superior Supply Co.—Valves, pipe, etc.
	29.60	B	Wadsworth-Howland Co.—Cement coating.
February	131.27	W	American Sewer Pipe Co.—4" sewer pipe.
	2.45		Bluefield Hardware Co.—Tools.
	14.98	W	" " " —Explosives for springs.
	230.17	B	W. F. Deitz—Plumbing in office building.
	18.25	G	Ga. Lbr. Co.—Lumber and millwork office building.
	2.35	W	" —Cement for springs.
	4,553.53	P	Lynchburg Foundry Co.—11,796'—6" pipe.
	81.23	W	N. & W.—freight on sewer pipe.
	473.45	W	Payroll—New Springs.
	47.75	P	" —Laying mains.
	2.90		Sundry freights, tools and materials.
	2.65		Superior Supply Co.—tools and materials.
	1.20	B	M. G. Whitlow—Speaking tube.

1.20	B	M. G. Whitlow—Speaking tube.	
March	17.60	W	Bluefield Hardware Co.—Explosives.
	24.50		" " " —Tools.
	1.98		" " " —Fittings.
	7.17	B	Burgess Electric Co.—Fixtures.
	14.00	F	Curtis-Pearson Co.—Card Cabinet.
	90.72	S	Gamon Meter Co.—12—⅝" meters.
	32.31	B	Georgia Lumber Co.—Lumber and plaster for office building.
	13.65	B	W. H. Harry Co.—Hardware for office building.
	3.06		" —Tools.
	138.93	P	N. & W.—freight on pipe.
	241.36	P	" " " " "
	55.58	S	H. Mueller Co.—Corporation cocks.
	31.88	S	Merkel Bros.—Service fittings.
	96.35	P	Payroll—Laying mains.
	688.35	W	" —New springs.
1029			
March	$86.00	P	Payroll—Hauling Pipe, etc.
	4.00	P	" —Relaying mains.
	4.60		Sundry materials and freights.
	33.60	S	Pittsburgh Meter Co.—2—1" meters.
	82.88	P	Superior Supply Co.—Galvanized pipe and fittings
	44.25	S	" " " —Meter tops and lids.
April	2.52		W. A. Bodell—Fittings.
	17.65		Bluefield Hardware Co.—Tools.
	32.30	W	" " " —Pipe and explosives.
	11.47	P	" " " " " fittings.
	1.65	P	" " " " " "
	6.65		Sundry freights and materials.
	2.36	P	W. F. Deitz—Fittings.

1912—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
	5.97	B	Georgia Lumber Co.—Lumber for office.
	4.18	P	" " " — "
	32.55	W	" " " —Cement for springs.
	.53	S	" " " — " for meter installation.
	515.29	P	Lynchburg Foundry Co.—516'—8" pipe and specials.
	9.60		W. W. Equipment Co.—Wheels for pipe cutter.
	950.33	P	Payroll—Relaying mains.
	30.48	P	" —Laying mains.
	458.80	W	" —Springs.
	5.25	S	" —Meter installation.
	5.25	S	" —Making taps.
	486.80	P	Rensselaer Valve Co.—24—4", 20—6", 6—8" valves.
	53.40		Superior Supply Co.—Tools and testing plugs.
	57.15	P	" " " —Jute, galv. pipe and fittings.
	279.62	P	" " " —Lead and fittings.
	27.01	P	" " " —Galv. pipe and fittings.
May	6.41		" " " —Tools.
	143.04	P	" " " —Lead and Jute.
	7.87		Sundry tools, material and freights.
	987.15	W	Payroll—New Springs.
	731.03	P	" —Laying mains.
	25.60	W	" —Gravity Springs.
	66.90	P	N. & W.—freight on lead pipe.
	4.25		Bluefield Hardware Co.—Tools.
	4.00	P	" " " —Galv. pipe and fittings.
	6.24		" " " —Fittings.
	47.27	W	" " " —Explosives and W. I. pipe.

	73.12	S	McGraw-Yarborough Co.—Corporation cocks.
	252.00	S	Neptune Meter Co.—30—⅝″ meters.
	23.94	S	Glauber Brass Mfg. Co.—Corporation cocks.
1030			
June	$212.10	P	W. W. Equipment Co.—2,000# lead, etc.
	17.48		Superior Supply Co.—Tools.
	10.15	P	" " " —Hemp.
	88.65	W	" " " —Hemp and galvanized pipe.
	18.45	S	" " " —Fittings and meter tops.
	10.09		Sundry tools, materials, and freights.
	8.00	P	Payroll—Laying mains.
	595.66	P	" —Relaying mains.
	851.03	W	" —New Springs.
	3.50	S	" —Meter installation.
	62.40	S	National Meter Co.—6—⅝″ meters.
	5.59	P	N. & W.—freight on pipe.
	.92	S	" — " " meters.
	50.40	W	" — " " sewer pipe.
	162.45	P	Lynchburg Foundry Co.—Specials.
	14.18	W	Georgia Lumber Co.—Cement for springs.
	142.80	S	Gamon Meter Co.—20—⅝″ meters.
	1.90	F	Curtis-Pearson Co.—Stamp Rack.
	33.00	W	Bluefield Hardware Co.—Explosives.
	2.90		" " " —Fittings.
	5.00	W	N. & W.—freight on sewer pipe.
	72.80	S	American Sewer Pipe Co.—154 pcs. 18″ ring pipe.
July	156.00		Superior Supply Co.—Valve and meter boxes.
	19.57	P	" " " —Galv. pipe and fittings.
	126.00	P	Rensselaer Valve Co.—12—6″ valves.

1912—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
	1,094.75	W	Payroll—New springs.
	509.57	P	" —Relaying mains.
	64.93	P	" —Laying mains.
	22.06	S	" —Meter installation.
	4.20		W. H. Harry Co.—Tools.
	149.63	P	Graham Grocery Co.—Cast iron pipe and specials.
	8.42		Sundry freights, materials and tools.
	16.68	P	Bluefield Hardware Co.—Galvanized pipe & fittings.
	2.00	F	" " " —Water Cooler.
	.99	S	" " " —Fittings.
	1.26	W	" " " —Fuse.
August	51.81	W	" " " —Explosives & gal. pipe.
	4.04	P	" " " —Galvanized pipe.
	19.83		Sundry tools, material and freights.
	13.20	W	Georgia Lumber Co.—cement.
	690.16	P	Lynchburg Foundry Co.—1200'—8" pipe and specials.
	1,217.54	W	" Foundry Co.—2280'—6" pipes—Springs.
	4.93		H. Mueller Co.—Tools.
1031			
August	$99.61	P	Payroll—Laying mains.
	161.75	P	" —Relaying mains.
	2,253.15	W	" —New Springs.
	9.98	S	" —Meter installation.
	102.17	W	Superior Supply Co.—Galvanized pipe.
	7.57	P	" " " —Galv. pipe and fittings.
	424.20	W	W. W. Equipment Co.—4,000# Leadite, springs.

	3.50		M. G. Whitlow—Tools.
Sept.	5.88		Sundry freights and materials.
	69.76	W	Ga. Lbr. Co.—Lumber and sewer pipe for springs.
	1.50		W. H. Harry Co.
	688.04	P	Lynchburg Foundry Co.—1,800′—6″ pipe.
	2,551.98	W	" " " —4,716′—8″ "
	287.55		N. & W.—freight on pipe.
	12.67		" — " " "
	5.31	P	Roanoke Hardware Co.—Plow handles and point.
	10.73	P	Superior Supply Co.—Galvanized pipe.
	1.44		" " " —Fittings.
	.42		Mueller Mfg. Co.—Tools.
	168.00	S	Pittsburgh Meter Co.—20—⅝″ meters.
	2,216.80	W	Payroll—New springs.
	94.21	P	" —Laying mains.
	7.35	S	" —Meter installations.
October	43.03	W	Bluefield Hardware Co.—Explosives & galv. pipe.
	32.12	P	" " " —Galv. pipe and fittings.
	51.70	W	Citizens Fuel & Supply Co.—Sand and cement.
	7.58		Sundry tools, freights and materials.
	142.80	S	Gamon Meter Co.—20—⅝″ meters.
	45.06	W	Ga. Lbr. Co.—Cement and lumber for springs.
	13.14	W	W. H. Harry Co.—Supplies for springs.
	.65	S	" —Fittings.
	18.02	B	" —Materials for office.
	4.20		" —Tools.
	794.13	P	Lynchburg Foundry Co.—1,500′—8″ pipe.
	2,299.26	W	" " " —4,152′—8″ "
	17.16	S	H. Mueller Co.—Corporation cocks.
	16.92	S	McGraw-Yarborough Co.—Corporation & curb cocks.

1912—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
	100.98	P	Payroll—Laying mains.
	8.75	S	" —Meter installation.
	1,608.65	W	" —New Springs.
	8.75	P	" Relaying mains.
	56.80		" Unloading pipe.
	77.80	W	Superior Supply Co.—Jute and galvanized pipe.
	41.95	S	" " " —Meter tops and rings.
1032			
October	$5.00		Bluefield Hardware Co.—Tools.
	16.94	W	" " " —Explosives.
	34.88	P	" " " —Galv. pipe & fittings.
	.53	S	" " " —Fittings.
November	100.00	F	Glenna Woodyard—Monarch typewriter.
	10.00	F	Bluefield Furniture Co.—Tables and rug.
	9.00		Sundry freights and materials.
	3.20	W	Citizens Coal & Supply Co.—Sand.
	4.00	F	Curtis-Pearson Co.—Eyelet Machine.
	24.40	W	Ga. Lbr. Co.—Cement and sewer pipe.
	19.95	S	McGraw-Yarborough Co.—Corporation Cocks.
	394.38		N. & W.—freight on pipe.
	20.86		H. Mueller Co.—Tools.
	8.58	S	" —Corporation Cocks.
	3.75	W	N. & W. R. R.—sheet netting for springs.
	84.00	S	Neptune Meter Co.—10—⅝" meters.
	927.30	W	Payroll—New Springs.
	110.83	P	" —Laying mains.

	24.60	W	Superior Supply Co.—Steel door for springs.
	29.40	S	Thomson Meter Co.—1—¾" and 1—1" meter.
	2.55	F	M. G. Whitlow—Cuspidors, etc.
	26.84	P	Bluefield Hardware Co.—Explosives, galv. pipe and fittings.
	44.95	W	" " Co.—Explosives & galv. pipe.
	3.06		" " " —Fittings.
	21.67		" Telephone Co.—Office Rental.
	3.20		Burgess Electric Co.—Lamps and shades.
December	32.50	F	Bluefield Furniture Co.—1 desk.
	16.75		" Hardware Co.—Tools.
	3.62	P	" " " —Galvanized pipe.
	125.00	F	" Dry Goods Co.—1 safe.
	65.00	B	" Telephone Co.—office rent.
	6.34		Sundry tools, freights, and materials.
	19.10	F	Curtis-Pearson Co.—office files, etc.
	4.20	F	Georgia Lumber Co.—1 rack.
	42.09	B	" " " —Lumber for office & shop.
	7.55	W	" " " — " and sewer pipe.
	12.33		W. H. Harry Co.—Tools and materials.
	96.15	B	Payroll—New Springs.
	414.00	W	" —Springs.
	64.20	P	" —Laying mains.
	2.40	S	" —Meter installation.
	17.10	W	Superior Supply Co.—Packing and strainers.
	11.15	M	" " " —Pump governor valve.
	1.40		" " " —Tools.
	29.70	S	" " " —Meter tops and rings.
	6.28	B	" " " —Smoke Stack, etc.

1912—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
December	$15.40	F	Philip Kleinman—Office Supplies.
	5.00	E	H. O. Wiles—Survey Lot.
	4.15		M. G. Whitlow—Tools.
	$37,236.20		
	196.07		Deduct for materials sold to City, Companies and Individuals.
	$37,040.13		Total.

1912—Income.

Month.	Amount.	Description.
	$12,013.37	Flat Rate Services.
	20,103.15	Metered.
	1,650.00	Fire Hydrant Rental.
	55.00	Rent from Bailey Farm.
	$33,821.52	Total.

1912—Operation.

January	$2.25	Sundry office expense.
	47.72	Castner, Curran & Bullitt—2 carloads coal.
	8.55	Curtis-Pearson Co.—Stationery.
	2.00	Flat Top Book & Stationery Co.—Stationery.
	9.29	Home Grocery Co.—Feed.

	7.00	Laird Printing Co.—Notices.
	92.22	N. & W. R. R.—Freight on coal.
	75.00	Payroll—Inspection.
	127.81	" —Pumping.
	9.25	" —Office Expense.
	27.35	Sundry office Expense.
	11.48	Standard Oil Co.—Oil.
February	6.30	Curtis-Pearson Co.—Stationery.
	17.44	Castner, Curran & Bullitt—Coal.
	11.00	Daily Telegraph & Printing Co.—Bills and postals.
	8.75	Flat Top Grocery Co.—Dust-absorbent.
1034		
February	$150.00	H. B. Hayes—Audit 1911.
	75.00	Payroll—Inspection.
	121.59	" —Pumping.
	5.25	" —Office Expense.
	42.44	Sundry office expense.
	4.56	Standard Fuel & Supply Co.—Feed.
	1.00	M. G. Whitlow—Turpentine.
March	4.20	Curtis-Pearson Co.—Stationery
	2.83	Sundry office expense.
	12.00	Membership—Bluefield Chamber of Commerce.
	19.75	Daily Telegraph & Printing Co.—Bills and cards.
	23.84	N. & W.—Freight on coal.
	75.00	Payroll—Inspection.
	95.53	" —Pumping.
	5.25	" —Office Expense.
	25.81	Sundry office expense.

1912—Plant Account.—*Continued.*

1912—Operation.—*Continued.*

Month.	Amount.	Description.
	9.47	Standard Fuel & Supply Co.—Feed.
	39.09	" Oil Co.—Oil.
April	25.49	Sundry office expense.
	5.00	N. & W.—permit to maintain 6" line.
	1.75	Curtis-Pearson Co.—Stamp rack.
	12.50	Daily Telegraph & Printing Co.—Postal cards.
	103.69	Flat Top Fuel Co.—2 carload- coal.
	75.00	Payroll—Inspection.
	86.00	" —Pumping.
	8.54	Standard Fuel & supply Co.—Feed.
	99.20	U. S. Special Excise Tax.
May	12.70	Standard Fuel & Supply Co.—Feed.
	120.00	State of West Virginia—License Tax.
	26.68	Sundry office expense.
	75.00	Payroll—Inspection.
	102.75	" —Pumping.
	7.35	" —Office Expense.
	4.00	Daily Telegraph & Printing Co.—Subscription.
	113.35	N. & W.—freight on coal.
	50.00	Donation to Relief Fund.
	10.50	Curtis-Pearson Co.—Stationery and supplies.
	18.00	Laird Printing Co.—Reports, Appeal and contracts.
	102.88	Flat Top Fuel Co.—2 carloads coal.
	13.00	Daily Telegraph & Printing Co.—Bills and postals.

June	229.55	Sanders & Crockett—Legal expense various cases.
	17.35	" " " " " " "
	12.42	Standard Fuel & Supply Co.—Feed.
	21.21	Sundry office expense.
	75.00	Payroll—Inspection.
1035	92.00	" —Pumping.
	3.50	" —Office Expense.
June	$67.12	N. & W.—Freight on coal.
	150.00	W. A. Glasgow—Retaining fee.
	43.29	Flat Top Fuel Co.—1 carload coal.
	9.00	Daily Telegraph & Printing Co.—Postals & receipts.
	.25	Curtis-Pearson Co.—Time books.
July	10.00	M. Hamilton Todd—Legal Expense.
	10.39	Standard Fuel & Supply Co.—Feed.
	75.00	Payroll—Inspection.
	93.28	" —Pumping.
	48.51	Flat Top Fuel Co.—1 carload coal.
	2.00	Daily Telegraph & Printing Co.—Subscription.
	32.00	" " " " Co.—Printing bills & postals.
	19.19	Sundry office expense.
	2.02	Office Expense.
	3.60	Curtis-Pearson Co.—Stationery.
August	26.39	Sundry office expense.
	33.00	Daily Telegraph & Printing Co.—Printing postals and bills.
	75.00	Payroll—Inspection.
	110.24	" —Pumping.
	12.60	Standard Fuel & Supply Co.—Feed.
September	22.61	Sundry office expense.
	40.00	E. H. Easley—Plumber's bends.

1912—Plant Account.—*Continued.*

1912—Operation.—*Continued.*

Month.	Amount.	Description.
	35.05	N. & W.—freight on coal.
	16.20	Superior Supply Co.—Waste.
	9.15	Standard Fuel & Supply Co.—Feed.
	35.14	" Oil Co.—Oil.
	75.00	Payroll—Inspection.
	194.98	" —Pumping.
October	28.75	Sundry office expense.
	10.50	City of Bluefield—License Tax.
	3.20	Curtis-Pearson Co.—Stationery.
	16.00	Daily Telegraph & Printing Co.—Postals and bills.
	78.67	Flat Top Fuel Co.—2 carloads coal.
	75.00	Payroll—Inspection.
	208.30	" —Pumping.
	7.21	Standard Fuel & Supply Co.—Feed.
	9.44	" Oil Co.—Oil.
November	41.58	Sundry office expense.
	24.05	Curtis-Pearson Co.—Office Stationery Supplies.
	92.75	Daily Telegraph & Printing Co.—Bills, letterheads, etc.
	42.30	Flat Top Fuel Co.—1 carload coal.
	56.82	N. & W.—freight on coal.
	75.00	Payroll—Inspection.
	176.01	" —Pumping.
	40.97	Standard Oil Co.—Oil.

	16.98	" Fuel & Supply Co.—Feed.
	9.00	" " " " " —Coal.
1036		
November	$200.00	J. M. Sanders—Retainer Fee.
	8.50	Stone Printing Co.—Meter reading book.
	29.37	W. G. Atwater—1 carload coal.
December	33.55	Sundry office expense.
	26.75	Daily Telegraph & Printing Co.—Statements, notices etc.
	4.00	" " " " " —Subscription.
	136.75	N. & W.—Freight on coal.
	75.00	Payroll—Inspection.
	193.55	" —Pumping.
	7.45	Standard Fuel & Supply Co.—Feed.
	1,839.48	State of West Virginia—Pipe Line Taxes.
	1,800.00	W. McCarthy—Salary for Year.
	1,500.00	A. L. Rhoads— " " "
	600.00	Glenna Woodyard—" " "
	$11,418.37	
	1,350.00	Philadelphia Salaries for year charged.
	150.00	" Rent " " " "
	$12,918.37	Total.
		1912—Maintenance.
January	$1.31	Bluefield Hardware Co.—Meter repair parts.
	1.75	Citizens Coal & Supply Co.—Sand for pipe line rep.
	264.20	National Meter Co.—Repair parts.

1912—Plant Account.—*Continued.*

1912—Maintenance.—*Continued.*

Month.	Amount.	Description.
	19.50	Neptune " " —Repairing 2" meter.
	110.75	Payroll—Pipe Line Maintenance.
	8.00	" —Meter "
	23.50	" —Springs "
	8.00	" —Ada Station "
	9.89	Superior Supply Co.—Gaskets, Nipples, etc.
February	127.83	Payroll—Pipe Line Maintenance.
	52.75	" —Meter "
	4.00	" —Ada Station "
	25.50	" —Gravity Springs "
1037		
March	$17.05	Bluefield Hardware Co.—Sheet Packing.
	8.40	Georgia Lumber Co.—Cement for pipe line repair.
	3.62	W. H. Harry—Repair materials.
	157.96	Payroll—Pipe Line Maintenance.
	6.00	" —Meter "
	21.00	" —Gravity Springs "
	2.00	" —Ada Spring "
	4.00	Standard Fuel & Supply Co.—Sand for pipe line repair.
	22.86	Pittsburgh Meter Co.—Repair Parts.
	12.94	Superior Supply Co.—Bolts & Brackets pipe line "
April	9.00	Bluefield Hardware Co.—2½" cock for Ada Pump.
	4.50	Enterprise Co.—Pipe Line.
	3.50	Burroughs Adding Machine Co.—Repairs.

	51.20	C. B. Whitlow—Painting office and repairs.
	141.53	Payroll—Pipe Line Maintenance.
	4.00	" —Meter "
	49.00	Superior Supply Co.—2 steam traps.
	2.00	" " " —repair lead carriage.
May	4.51	" " " —check valve and fittings.
	172.44	Payroll—Pipe Line Maintenance.
	4.00	" —Meter "
	39.15	" —Gravity Springs "
	27.65	" —Tank "
	65.00	Arlington Manufacturing Co.—Coating for tanks.
	13.45	Bluefield Hardware Co.—Gaskets for Ada pump.
	4.80	" " " —Sheet packing for tanks.
	1.81	Georgia Lumber Co.—Lumber for tank scaffold.
June	.50	M. G. Whitlow—Stove pot.
	23.15	" " —Asphaltum for tanks.
	2.80	Standard Fuel & Supply Co.—Sand for pipe line repair.
	14.00	Baker Stone Co.—10 yds. stone for " " "
	123.80	Payroll—Pipe Line Maintenance.
	6.00	" —Meter "
	19.75	" —Gravity Springs "
	43.92	" —Tank "
	15.67	National Meter Co.—Repair Parts.
July	2.32	Superior Supply Co.—Tool steel for pipe line repair.
	7.40	Neptune Meter Co.—Repair parts.
	165.44	Payroll—Pipe line maintenance.
	8.00	" —Meter "
	27.88	" —Gravity Springs "
	12.00	National Meter Co.—Repair parts.

1912—Plant Account.—*Continued.*

1912—Maintenance.—*Continued.*

Month.	Amount.	Description.
	27.00	Longacre & Ewing—Fire Insurance.
	4.73	Georgia Lumber Co.—Cement for pipe line repairs.
	4.00	Citizens Coal & Supply Co.—Sand for pipe line repair.
1038		
August	$16.00	Buffalo Meter Co.—Repair parts.
	.51	Georgia Lumber Co.—Lumber.
	171.08	Payroll—Pipe Line Maintenance.
	8.00	" —Meter "
	17.50	" —Gravity Springs "
September	12.30	Citizens Coal & Supply Co.—Cement for spring rep.
	5.72	Georgia Lumber Co.—Lumber for Beaver Pond repair.
	3.40	Standard Fuel & Supply Co.—Sand for pipe line repair.
	151.91	Payroll—Pipe Line Maintenance.
	7.50	" —Meter "
	21.50	" —Gravity Springs "
October	6.20	Citizens Fuel & Supply Co.—Sand and cement.
	8.08	W. H. Harry—Supplies for pipe line repair.
	1.00	" " " gravity springs repair.
	84.84	Longacre & Ewing—Insurance.
	187.98	Payroll—Pipe Line Maintenance.
	6.00	" —Meter "
	4.00	" —Ada Station "
	22.75	" —Gravity Springs "

	10.40	Superior Supply Co.—Strainer and packing Ada pump.
	2.42	Bluefield Hardware Co.—Pipe for meter repairs.
November	228.28	Payroll—Pipe Line Maintenance.
	24.45	" —Meter "
	24.38	" —Gravity Springs "
	1.56	Bluefield Hardware Co.—Fittings for pipe line repair.
December	7.60	" " " —Tar paper—Ada.
	8.15	" " " — " " —Shop.
	2.02	Georgia Lumber Co.—Lumber for pipe line repair.
	10.75	W. H. Harry—Materials for maintenance.
	165.58	Payroll—Pipe Line Maintenance.
	50.05	" —Meter "
	19.25	" —Gravity Springs "
	1.50	Phelps Furniture Co.—Repair office chairs.
	$3,311.37—Total	

1039 Résumé of Plant Account, Income, and Operation for 1912.

Cost of Plant and Property Incurred Prior to 1912...	$330,769.89
" " " " " " during Year....	37,040.13
Total Cost of Plant and Property Incurred at end of Year.....	$367,810.02
Income from Service during Year.....	$33,821.52
Expenditure for Operation during Year.. $12,918.37	
" " Maintenance " " .. 3,311.37	
Total " " Operation and Maintenance during year	16,229.74
Net Return Applicable to Depreciation, Interest and Dividends.....	$17,591.78

Résumé of Interest and Dividends for 1912.

Interest paid on Loans from J. M. Wirgman and Stockholders	$1,215.00
Dividends for year.....	5,040.00
Amount withdrawn for Interest and Dividends in 1912.	$6,255.00

1040 1913.

During 1913 there were 55 fire hydrants installed in connection with the extension of the distribution system. The cost of the hydrant installations was paid by the city.

There were three electro-hydraulic valves, sizes 10", 8" and 6", installed on the distribution mains. These valves are operated from switches in the water works office, the current being taken from a battery of 20 dry cells. A transmission line erected in connection with the valves is made up of two lines of #12 copper clad wire strung on 30 foot poles with glass insulators, cross arms and galvanized braces.

The bulk of the work on the new office building and garage was completed by the end of the year. Some additional work was done to complete the development of the new springs purchased in 1910, chief of which was the fencing of the tracts of land in connection with each spring.

Of the total revenue for the year, 4.6% was derived from fire hydrant rental; 21.8% from flat rate consumption, and 73.6% from metered consumption. A rental of $60.00 from the tenants of the Bailey farm has been included in the total income.

No dividend was declared for the year 1913.

The capital stock was increased in the amount of $60,000 for the purpose of paying off loans that had been made by Mr. J. M. Wirgman and the stockholders.

Month.	Amount.	Acct.	Description.
Jan.	$10.46	B	Burgess Elec. Co.—shop wiring.
	17.48	P	Bluefield Hardware Co.—galv. pipe & packing.
	.50		" " " —tools.
	.60	S	" " " —fittings.
	37.42	B	W. F. Deitz—material for shop.
	1.28	B	Georgia Lumber Co.—lumber for shop & office.
	1.40	S	H. Mueller Co.—service supplies.
	75.45		" " #2 tapping machine.
	6.00	F	Adolf Newman & Son—frame.
	160.00	S	National Meter Co.—20—⅝" meters.
	31.13	P	Payroll—laying mains.
	14.87	S	" meter installation.
	4.00	W	" new springs.
	10.00	F	Phelps Furniture Co.—table.
	52.36	S	Superior Supply Co.—meter taps & rings.
	6.50		" " " Babbitt testing machine.
	.49		McGraw—Yarborough Co.—tools.
	28.29	S	" " " —corporation stops.
	3.72		Sundry tools, freights & materials.
Feb.	130.00	B	Bluefield Telephone Co.—Jan. Feb. office rent.
	39.52	P	" Hardware Co.—galv. pipe & fittings.
	3.46	B	W. H. Harry—supplies for shop.
	.49	B	Georgia Lumber Co. supplies for shop.
	112.73	P	Payroll—laying mains.
	2.00	S	" meter installation.
	10.04		Sundry freights & materials.

1913—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
	10.54		Superior Supply Co.—tools.
	14.60	P	" " " —valves boxes & jute.
	.60	S	" " " —cement for meter instal.
	1.25	B	M. G. Whitlow—supplies for shop.
Mar.	2.75		Bernards Fdy. Co.—bronze hyd. test nipple.
	87.26	P	Bluefield Hardware Co.—pipe & fittings.
	4.65	P	" " " " "
	11.84		Ellis Ford Mfg. Co.—tools.
	4.06		W. H. Harry Co.—tools.
	139.90	P	Payroll—laying mains.
	61.00	W	" new springs.
	5.25	S	" meter installation.
	168.00	S	Pittsburgh Meter Co.—20—⅝" meters.
	3.55		Sundry tools, freights & materials.
	111.47	P	Superior Supply Co.—galvanized pipe.
	20.25		" " " —tools.
	16.50	S	" " " —meter taps & rings.
	63.60	S	Thomson Meter Co.—1—1½"; 2—1" meters.
1042			
Apr.	$11.44		Bluefield Hardware Co.—tools.
	35.31	P	" " " —galv. pipe & fittings.
	8.56	W	" " " —explosives.
	9.03		Citizens *Cook* Sup. Co.—sand & cement.
	1.70	S	W. F. Deitz—curb stops.
	5.10	P	Enterprise Co.—plugs.
	84.86	S	Gamon Meter Co.—12—⅝" meters.

	1.55		Georgia Lumber Co.—tools.
	12.52		W. H. Harry Co.—tools.
	81.31	P	N. & W. freights on pipe, etc.
	59.19	S	H. Mueller Co.—corporation cocks.
	253.00	P	McGraw-Yarborough Co.—lead & oakum.
	19.02		" " " —tools.
	57.30	W	Payroll—New Springs.
	641.21	P	" —laying mains.
	11.20	S	" —meter installation.
	10.59		Sundry tools, freight & materials.
	16.60	P	Rensselaer Valve Co.—indicator post.
	31.00	P	A. P. Smith Mfg. Co.—8" valve.
	42.50	S	Superior Supply Co.—meter taps & rings.
	15.00		" " " tools.
	.55	S	" " " cement for water installation.
May	3.34	P	Bluefield Gas & Power Co.—8"—45° bend.
	92.58	P	Bluefield Hardware Co.—galv. pipes & fittings.
	130.00	B	Bluefield Telephone Co.—Apr.-May office rent.
	6.55	P	Citizens Coal & Supply Co.—sand & cement.
	257.04	S	Gamon Meter Co.—36—⅝" meters.
	360.00	R	Sterling Hardware Co.—800 rods fencing.
	41.25	S	Superior Supply Co.—meter tops & rings.
	80.55	P	" " " —valve boxes & galv. pipe.
	643.60	P	Rensselaer Water Co.—13—6"; 30—8" valves.
	2,568.50	P	" " " 46—6"; 9—4" hydts.
	15.07		Sundry tools, freights & materials.
	15.00		National Meter Co.—scale.
	105.24	P	McGraw-Yarborough Co.—lead.
	1.38		" " " —tools.

1913—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Decription.
	34.25	P	N. & W. freight on pipe specials.
	16.95	P	" " " lead.
	84.22	W	" " " sewer pipe.
	423.52	P	Lynchburg Foundry Co.—specials.
	788.21	P	Payroll—laying mains.
	61.40	W	" new springs.
	5.20	S	" meter installation.
1043			
	$1,041.61	P	U. S. Cast Iron Foundry Co., 2,628'—6" pipe.
	32.39	P	W. W. Equipment Co.—8" valve.
	179.65	S	American Sewer Pipe Co.—224 pcs. 18" ring pipe.
June	4.45		Bluefield Hardware Co.—tools.
	10.01	P	" " " pipe & fittings.
	130.00	B	" Telephone Co., Mar. & June office rent.
	38.88	P	Citizens Coal & Sup. Co. sand & cement.
	418.50	P	Engberg Elec. Co. 1—10"; 1—8"; 1—6" El. hyd. valves.
	10.87	P	Georgia Lumber Co.—lumber & cement.
	4.25		W. H. Harry Co., tools.
	2.48	P	" " sundry materials.
	55.21		H. Mueller Co.—tools.
	30.90	W	T. P. Morgan—206 fence posts.
	17.79	F	N. & W. freights on office furniture.
	16.74	P	" " " valves & castings.
	51.57	S	McGraw-Yarborough Co.—corporation cocks, etc.
	81.80	S	Neptune Meter Co., 1—1"; 1—2" meters.

	573.15	P	Payroll, laying mains.
	398.92	W	" new springs.
	9.25	S	" meter installation.
	7.19	F	N. & W. freight on office furniture.
	20.00		Sundry tools, freights & materials.
	10.50		Superior Supply Co.—tools, chain block.
	27.82	P	" " " —oakum & galv. pipe.
	17.60		G. E. Stafford—screen doors, office.
	6.00	P	Stone & Supply Co.—stone.
	400.00		A. P. Smith Co.—tapping machine.
	507.36	P	U. S. C. I. Foundry Co., 1,272'—6" pipe.
	210.00	F	Virginia Land Co.—furniture & safe.
	159.00	F	" " " —surveying instruments.
	72.00	P	W. W. Equipment Co.—plugs.
July	41.49	W	Bluefield Hardware Co.—explosives & galv. pipe & fencing.
	157.48	P	Bluefield Hardware Co.—galv. pipe & fittings.
	65.00	B	Bluefield Telephone Co.—July office rent.
	13.08	P	Georgia Lumber Co.—cement & lumber.
	9.81	P	N. & W. freight on valves.
	8.68	F	" " " furniture.
	124.16		Peeble Paving Brick Co.—10,600 brick.
	670.07	P	Payroll—laying mains.
	407.10	W	" —new springs.
	12.76		Sundry tools, freights & materials.
	120.11	P	Superior Supply Co.—oakum, galv. pipe & fittings.
1044			
July.	$91.00		Superior Supply Co.—meter & valve boxes.
	6.45	P	Standard Fuel & Supply Co.—sand.
	3.15		M. G. Whitlow—tools.

1913—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
Aug.	13.00		Baker & Stone Co.—stone.
	33.60	B	Bluefield Hardware Co.—building material for shop.
	108.06	P	Bluefield Hardware Co. galv. pipe & fittings.
	19.39	W	" " " explosives & "
	50.04		" " " lead.
	6.50		" " " tools.
	18.10		Citizens Coal & Supply Co.—cement.
	107.10	S	Gamon Meter Co. 15—⅝" meters.
	27.21		Georgia Lumber Co.—cement.
	3.53	P	" " " —cement.
	58.76	B	" " " —lumber for shop.
	16.67	W	" " " —lumber & cement.
	4.00	W	W. H. Harry—hardware.
	3.83	B	" " —hardware for shop.
	7.00		Hawley Mdse. Co.—boots.
	1,625.38	P	Lynchburg Foundry Co. 2,088'—8"; 2,004'—6" pipe and specials.
	135.54		N. & W. freight on brick.
	136.56	P	" " " pipe.
	2.13	F	" " " laboratory equipment.
	9.00	F	Bluefield Furniture Co.—refrigerator.
	681.34	P	Payroll—laying mains.
	291.10	W	" —springs.
	18.00	B	" —shop.
	9.03		Sundry tools, freights & materials.
	22.79	P	Superior Supply Co.—oakum, galv. pipe & fittings.
	60.17	P	" " " —lead & oakum.
	37.80		Standard Fuel & Supply Co.—sand.

	7.00	P	H. O. Wiles—setting grades.
	11.30	F	M. G. Whitlow—laboratory equipment.
	1.50		" —tools.
	1,116.40	P	W. W. Equipment Co.—valves.
Sept.	86.04	P	Bluefield Hardware Co.—lead.
	72.19	P	" " " —galv. pipe & fittings.
	2.70	F	" Gas Power Co.—laboratory equipment.
	6.19		Citizens Coal & Supply Co.—cement.
	132.29	F	Eimer & Amend Laboratory equipment.
	9.40	P	Georgia Lumber Co.—cement.
	11.80		" " " "
	214.20	S	Gamon Meter Co. 30—⅝" meters.
	4.50	W	W. H. Harry—material for new springs.
1045			
	$16.25	S	H. Mueller Co.—corporation cocks.
	304.81	P	Payroll—laying mains.
	37.10	W	" —new springs.
	9.61		Sundry tools, freights & materials.
	87.03	P	Superior Supply Co.—oakum, lead, galv. pipe & fittings.
	48.69	P	Superior Supply Co.—valve boxes & fittings.
	14.70		Standard Fuel & Supply Co.—sand.
	1.50		M. G. Whitlow, laboratory equipment.
Oct.	92.75	P	Bluefield Hardware Co.—galv. pipe & fittings.
	3.75		" " " —tools.
	26.90		Citizens Coal & Supply Co.—cement & sand.
	1.60	P	Georgia Lumber Co.—lumber.
	4.40		W. H. Harry Co.—sundry tools & material.
	4.80	P	Lynchburg Foundry Co. 8"—90° bend.
	24.75		H. Mueller Co.—tapping machine.

1913—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
	309.47	P	Payroll—laying mains.
	23.40	W	" —new springs.
	154.77	P	Markel Bros. 3,000# pig lead.
	1.59		Sundry tools & freights.
	22.50	P	A. P. Smith Co. 8" valve.
	82.59	P	Superior Supply Co. oakum, lead, galv. pipe.
	41.66	S	" " " meter tops & rings.
	16.00		Stone & Supply Co.—stone.
	25.47		Sundry tools, freights & materials.
Nov.	1.92	S	Bluefield Hardware Co.—fittings for meters.
	6.90		" " " —tools.
	15.88	P	" " " —electric valve line.
	1.44		" " " —fittings.
	15.33	P	" " " —galv. pipe & fittings.
	7.00	P	Citizens Coal & Supply Co.—sand.
	43.94	W	Georgia Lumber Co.—lumber.
	25.59	P	" " " —cement & lumber.
	5.95		W. H. Harry Co.—sundry tools & material.
	451.25	P	Payroll—laying means.
	22.00	S	" —meter installation.
	51.95	P	" —electric valve line.
	5.55	W	" —new springs.
	12.85		Sundry tools, freights & materials.
	8.00		Roanoke Hardware Co.—2 plow points.
	1.25		Sterling Hardware Co.—tools.
	4.65		Standard Fuel & Supply Co.—sand.
	75.86	P	Superior Supply Co.—galv. pipe & fittings.

Dec.	$338.34	B	Bluefield Telephone Co.—office rent Aug.-Dec. 1913.
	4.00	P	Bluefield Telephone Co.—creosote for valve line.
1046	4.79		" Hardware Co.—tools.
	104.43	P	" " " —galv. pipe & fittings.
	57.38	P	" " " —wire for electric valve line.
	15.75	P	Baker Stone Co.—Stone.
	9.00	P	Citizens Coal & Supply Co.—sand.
	4.25	P	" " " " " —sand & cement electric valve line.
	5.60	B	W. F. Deitz—sink etc. for shop.
	6.77	P	Superior Supply Co.—oakum—fittings.
	3.40		" " " —tools.
	35.55	P	" " " —cross-arms, insulators, etc.
	191.76	P	Payroll—laying mains.
	299.34	P	" —Electric valve line.
	12.60		Neptune Meter Co.—1—¾" meter.
	14.19		Sundry tools, freights & material.
	75.00	E	Pedigo & Garry—office building plans.
	25.20	B	N. & W. freight on brick.
	1.68		" " " material for elec. valve line.
	3.91		W. H. Harry Co.—tools & materials.
	9.31	P	Georgia Lumber Co.—lumber & cement.
	8.21		" " " —cement & sewer pipe for electric valve line.
	$23,497.35		
	6,301.20		Deduct for materials sold to City Companies and individuals.
	$17,196.15		
	400.00		Deduct for sub-rent of Telephone Co. office.
	$16,796.15—Total.		

1913—Operation.

Month.	Amount.	Description.
Jan.	$2.57	Office Expense.
	44.40	Citizens Fuel & Supply Co.—coal.
	7.80	Curtis-Pearson Co.—stationery.
	33.00	Daily Tel. Ptg. Co.—letterheads, cards, etc.
	109.22	Flat Top Fuel Co.—2 carloads coal.
	19.65	N. & W. freight on coal.
	75.00	Payroll—inspection.
	130.08	" —pumping.
	8.80	" —office expense.
	18.23	Sundry office expense.
	11.13	Standard Fuel & Supply Co.—feed.
	13.72	" Oil Co.—oil.
Feb.	8.25	Curtis-Pearson Co.—office supplies.
	3.49	Office expense.
	28.00	Daily Tel. Ptg. Co.—postals and bills.
	53.10	Flat Top Fuel Co.—coal.
	1.45	W. H. Harry—office expense.
	50.36	W. McCarthy—traveling expense, 2 trips to Charleston.
	38.36	N. & W. freight on coal.
	75.00	Payroll—inspection.
	122.70	" pumping.
	40.20	Sundry office expense.
	8.72	Standard Fuel & Supply Co.—feed.
March.	2.20	Office expense.
	15.90	Coal at Ada.

	9.70	Curtis Pearson Co.—stationery & supplies.
	10.25	Daily Tel. Ptg. Co., tap slips, envelope, etc.
	40.59	Flat Top Fuel Co.—1 carload coal.
	150.00	H. B. Hayes—Audit 1912.
	29.32	N. & W. freight on coal.
	75.00	Payroll—inspection.
	117.32	" —pumping.
	35.67	Sundry office expense.
	9.63	Standard Fuel & Supply Co.—feed.
April.	1.30	Curtis, Pearson Co.—office supplies.
	26.00	Daily Tel. Ptg. Co.—postals & water bills.
	51.30	Flat Top Fuel Co.—1 carload coal.
	37.06	N. &. W. freight on coal.
	55.38	U. S excise tax.
	75.00	Payroll—inspection.
	127.67	" —pumping.
	5.00	H. & W. R. R. Permit to maintain 6" line.
	34.01	Sundry office expense.
	6.83	Standard Fuel & Supply Co.—feed.
1048	25.74	Standard Oil Co.—oil.
May.	$1.36	Office Expense.
	5.45	Curtis-Pearson Co.—stationery & supplies.
	14.50	Daily Tel. & Ptg. Co.—invoices & cards.
	51.21	Flat Top Fuel Co.—1 carload coal.
	8.08	Standard Fuel & Supply Co.—feed.
	31.26	Sundry office expense.
	21.59	W. McCarthy—expense to Charleston.
	36.98	N. & W. freight on coal.
	75.00	Payroll—inspection.

1913—Plant Account.—*Continued.*

1913—Operation.—*Continued.*

Month.	Amount.	Description.
	129.05	" —pumping.
	7.00	Water Ryan—shipping safe—Philadelphia to Bluefield.
June.	1.10	Curtis-Pearson Co.—stationery & supplies.
	20.50	Daily Telephone & Ptg. Co.—postals, bills & envelopes.
	132.33	Payroll—pumping.
	75.00	" —inspection.
	15.00	Pitzer Transfer Co.—hauling & shipping safe.
	36.63	Sundry office expense.
	19.95	Superior Supply Co.—packing.
	8.55	Standard Fuel & Supply Co.—feed.
	16.00	Stone Printing Co.—plumber permits.
	120.00	State of W. Virginia—license tax.
	71.04	Whitall-Tatum Co.—laboratory supplies.
	2.25	Curtis-Pearson Co.—stationery & supplies.
	24.50	Daily Tel. & Ptg. Co.—bills and postals.
	93.38	Flat Top Fuel Co.—coal.
	67.44	N. & W. freight on coal.
	75.00	Payroll—inspection.
	163.55	" pumping.
	26.88	Sundry office expense.
	6.25	J. M. Wirgman—traveling expense.
	10.50	City of Bluefield—City license tax.
	44.47	Standard Oil Co.—oil.
	4.63	Standard Fuel & Supply Co.—feed.
	60.00	Booth, Garrett & Blair—water analysis.

8.63	Burgess Electric Co.—wiring for laboratory.
2.50	Curtis-Pearson Co.—stationery.
19.00	Daily Tel. & Ptg. Co.—postals.
40.00	E. H. Easley—plumber's license.
94.91	Flat Top Fuel Co.—2 carloads coal.
68.56	N. & W. freight on coal.
75.00	Payroll—inspection.
198.68	" pumping.
36.21	Sundry office expense.
9.52	Standard Fuel & Supply Co.—feed.
12.00	Bluefield Chamber of Commerce subscription.
1049	
$4.90	Curtis-Pearson Co.—stationery & supplies.
61.00	Daily Tel. & Ptg. Co.—Advertising & printing.
50.99	Flat Top Fuel Co.—coal.
42.00	H. M. Kurtz—expense to Bluefield.
75.00	Payroll—inspection.
216.97	" pumping.
18.33	State of W. Virginia—Workmen's compensation fund.
35.76	Sundry office expense.
10.45	Standard Fuel & Supply Co.
15.00	Stone Printing Co.—4 meter reading books.
9.75	Standard Oil Co.—oil.
10.60	Coal.
8.25	Curtis-Pearson Co.—stationery & supplies.
15.00	Daily Tel. & Ptg. Co.—Cards, etc.
99.81	Flat Top Fuel Co. 2 carloads coal.
75.00	Payroll—inspection.
211.29	" pumping.
52.50	Hawkins Undertaking Co.—Funeral donation.

1913—Plant Account.—*Continued.*

1913—Operation.—*Continued.*

Month.	Amount.	Description.
	72.77	N. & W. freight on coal.
	10.87	State of W. Virginia—Workmen's compensation fund.
	11.50	Standard Fuel & Supply Co.—feed.
	44.16	Standard Oil Co.—oil.
	31.52	Sundry office expense.
	1.90	Curtis-Pearson Co.—stationery & supplies.
	24.25	Daily Tel. & Ptg. Co.—postals, letterheads, etc.
	153.08	Flat Top Fuel Co. 3 carloads coal.
	4.60	Philip Kleiman—picture framers & time books.
	83.84	N. & W. freight on coal.
	75.00	Payroll inspection.
	180.33	Payroll—pumping.
	10.14	State of W. Virginia workmen's compensation fund.
	28.69	Sundry office expense.
	210.00	Sanders & Crockett—retainer fee.
	9.25	Standard Fuel & Supply Co.—feed.
	9.62	Standard Oil Co.—oil.
	5.80	Superior Supply Co.—packing.
December	2,027.00	State of W. Virginia—taxes (pipe line).
	34.65	" " " —special license fee, account Public Service Commission.
	.95	Curtis-Pearson Co.—stationery.
	35.50	Daily Tel. & Ptg. Co.—postals, bills, etc.
	2.45	East End Pharmacy—chemicals.
	54.86	Flat Top Fuel Co. 1 carload coal.

	12.09	Standard Fuel & Supply Co.—feed
1050	1.00	M. G. Whitlow—saddle blanket.
	$75.00	Payroll—inspection.
	177.56	" pumping.
	36.50	Sundry office expense.
	9.59	State of W. Virginia—Workmen's compensation fund.
	34.26	W. McCarthy—expense to Philadelphia.
	111.64	N. & W. freight on coal.
	11.58	Office expense.
	1,800.00	W. McCarthy—salary for year.
	1,500.00	A. L. Rhoads " " "
	600.00	Glenne Woodyard—salary for year.
	$12,390.09	
	69.60	Deduct for coal sold to individuals.
	$12,320.49	
	3,445.81	Philadelphia office salaries charged for year.
	150.00	" " rent " " "
	$15,916.30	Total.
		1913—Maintenance.
January	8.00	Buffalo Meter Co.—repair parts.
	3.00	Citizens Coal & Supply Co.—sand.
	8.20	Georgia Lumber Co.—lumber & cement P. L. rep.
	.98	" " " " for motor maintenance.

1913—Plant Account.—*Continued.*

1913—Maintenance.—*Continued.*

Month.	Amount.	Description.
	6.45	Hersey Mfg. Co.—motor repair parts.
	5.65	W. H. Harry—materials for repairs.
	56.00	National Meter Co.—repair parts.
	19.90	Neptune Meter Co. " "
	32.89	Longacre & Ewing—fire insurance 1913-14.
	215.22	Payroll—pipe line maintenance.
	15.25	" meter "
	11.00	" Ada Station "
	27.38	" Gravity Springs maintenance.
	6.02	Superior Supply Co. iron for P. L. repair.
	6.50	" " " gov. pulley for Ada pump.
	14.02	Pittsburgh Meter Co.—repair parts.
1051		
February	$167.58	Payroll—pipe line maintenance.
	8.00	" meters "
	139.65	Hartford Co. fly-wheel and boiler insurance.
	14.00	Payroll—Ada Station maintenance.
	18.38	" Gravity Springs "
	33.00	" New springs "
March	137.83	" pipe line "
	6.00	" meters "
	17.50	" gravity springs "
	75.00	Hartford Co.—Beaver Pond boiler insurance.

	3.55	Superior Supply Co.—packing for valve seats.
	6.56	" " " gaskets for pumps.
	2.25	M. G. Whitlow—repair materials.
April	114.51	Payroll—pipe line maintenance.
	17.50	" gravity springs "
May	5.21	Georgia Lumber Co.—lumber for P. L. repair.
	5.04	W. H. Harry Co. P. L. repair material.
	9.10	Superior Supply Co. valve gland & rope.
	201.05	Payroll—pipe line maintenance.
	4.00	" Ada Station "
	6.00	" Meter "
	14.00	" Gravity Spring "
June	2.70	W. H. Harry Co. material for P. L. repair.
	221.50	Payroll—pipe line maintenance.
	6.00	" meter "
	4.00	" Ada Station "
	12.25	" Gravity Springs "
July	4.40	W. H. Harry Co. material for pipe line repair.
	150.17	Payroll—pipe line maintenance.
	12.43	" Gravity springs—maintenance.
	14.65	" meters "
August	3.00	Bluefield Hardware Co.—manhole gaskets.
	13.28	W. H. Harry material for pipe line repair.
	8.00	" " " Beaver Pond "
	132.34	Payroll pipe line maintenance.
	46.38	" gravity spring "
	4.80	Superior Supply Co.—sheet packing for p. l. repair.
	1.50	" " " 2—¾" rods.
September	21.91	Bluefield Hardware Co.—fencing for Beaver Pond.

1913—Plant Account.—*Continued.*

1913—Maintenance.—*Continued.*

Month.	Amount.	Description.
	23.28	Georgia Lumber Co. lumber for pipe line repair.
	3.00	" " " lime for Beaver Pond "
	1.15	W. H. Harry material for pipe line repair.
	137.16	Payroll pipe line maintenance.
	125.95	" Beaver Pond "
	15.70	" Gravity Springs "
	8.75	" meter maintenance.
1052		
	$21.30	Phillips-Carey Co. paint for tanks.
	3.08	Superior Supply Co.—fittings for pipe line repair.
October	3.42	Bluefield Hardware Co.—gage glasses.
	14.40	Longacre & Ewing Co.—fire insurance 1913-16.
	3.75	Georgia Lumber Co. fire clay for boilers.
	164.87	Payroll—pipe line maintenance.
	14.00	" gravity springs "
	14.90	Quaker City Rubber Co. Beaver Pond pump valves.
	19.80	Buffalo Meter Co.—repair parts.
	4.50	Garmon Meter Co.—discs.
	7.64	Georgia Lumber Co.—cement for pipe line mainten.
	6.65	Hersey Mfg. Co.—discs & trains.
	23.95	National Meter Co.—repair parts.
	17.80	Neptune " " " "
	15.50	Pittsburgh " " " "
	288.49	Payroll pipe line maintenance.

	21.75	" gravity springs "
	15.00	" new springs "
	4.00	" Ada Station "
December	2.00	Citizens Coal & Supply Co. sand.
	2.77	Superior Supply Co. material for pipe line repair.
	10.71	W. H. Wheeler lumber for Beaver Pond repair.
	231.01	Payroll pipe line maintenance.
	18.00	" meter maintenance.
	6.00	" Ada Station "
	15.00	" springs "
	14.00	" Gravity springs maintenance.
	5.34	N. & W. paint for tanks.
	21.30	Philip Carey Co.—paint for tanks.
	2.20	W. H. Harry Co. material for repairs.
	1.20	Georgia Lumber Co.—cement.
	$3,410.89	Total.

1053 Résumé of Plant Account, Operation, and Income for 1913.

Cost of Plant and Property incurred prior to 1913....		$367,810.02
" " " " " " during year		16,796.15
Total Cost of Plant and Property Incurred at End of Year		$384,606.17
Income from service during year.....		36,091.91
Expenditure for Operation during Year..	$15,916.30	
" " Maintenance " " ..	3,410.89	
Total Expenditures for Operation and Maintenance During Year		19,327.19
Net Return Applicable to Depreciation, Interest and Dividends		$16,764.72

Résumé of Interest and Dividends for 1913.

Interest Paid on Loands from J. M. Wirgman and Stockholders	3,050.00
Dividends for Year	0.00
Amount Withdrawn for Interest and Dividends in 1913	$3,050.00

1054 1914.

The distribution system was enlarged and a number of services and meters installed. No fire hydrants were set.

The office building and garage were completed.

Spring No. 14 was overhauled and equipped with a new basin and head house.

Of the total revenue for the year 7.8% was derived from fire hydrant rental; 20.5% from flat rate consumption and 71.7% from metered consumption. A rental of $55.00 from the tenants of the Bailey farm has been included in the total income.

No dividend was declared for 1914.

Month.	Amount.	Acct.	Description.
January.	$75.00	B	Bluefield Telephone Co.—Office rent Jan.
	19.25	P	" " " —copper wire for electric valve line.
	4.88		" Hardware Co.—tools.
	49.89	P	" " " —galv. pipe & fittings.
	7.05	P	Georgia Lumber Co.—cement for electric valve line.
	21.42	S	Gamon Meter Co. 3—⅝" meters.
	2.37		R. W. Doss Electric Supplies for electric valve line.
	252.00	S	Neptune Meter Co. 30—⅝" meters.
	22.08		Phipps & Smoot—brick for electric valve line.
	124.93	P	Payroll—laying mains.
	40.00	P	" electric valve line.
	2.45		Sundry tools, freights & material.
	1.25		M. G. Whitlow—rule.
	166.80	B	Richland's Brick Corporation—brick.
	43.95		Superior Supply Co.—sewer pipe tops & rings, etc. for electric valve line.
	.40	P	Superior Supply Co. fittings.
February.	1,767.50		Bigelow Willey Motor Co.—motor truck.
	22.37	P	Bluefield Hardware Co.—galvanized pipe.
	1.80		" " " —tools.
	75.00	B	Bluefield Telephone Co.—Office rent for Feb.
	4.20	B	Burgess Electric Co.—electric lamps.
	.35	P	W. H. Harry—explosives.
	107.67		H. Mueller Mfg. Co.—corporation cocks.
	103.75	P	Payroll—laying mains.
	16.25	S	" —meter installation.
	6.20		Sundry material, tools & freights.

1914—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
	2.25		Superior Supply Co.—tools.
	4.34	P	" " " —galvanized pipe & fittings.
	8.25	S	" " " —meter tops & lids.
March.	2.33		Bluefield Hardware Co.—fittings.
	15.35	B	" " " —nails, etc. for office building.
	13.61		" " " —tools.
	75.00	B	" Telephone Co.—March office rent.
	33.30	B	Baker Stone Co.—18 yds. stone for office building.
	55.55	B	Citizens Coal & Supply Co.—sand & cement office building.
	2.65		W. H. Harry—tools.
	.30	S	" —fittings.
	44.55		N. & W. freight on auto truck.
	147.39	P	Payroll—laying mains.
	8.73	S	" meter installation.
1056			
	$2.75		Sundry tools, material & freight.
	1.00		Saxon Lime & Lumber Co.—lime for office building.
	41.25	S	Superior Supply Co.—meter tops & rings.
	7.71	P	" " " galv. pipe & fittings.
April.	4.30	B	Bluefield Hardware Co.—Nails for office building.
	110.09	P	" " " —galv. pipe & fittings.
	60.13		" " " —tools.
	75.00	B	" Telephone Co.—April office rent.
	73.50	B	Citizens Coal & Supply Co.—cement & sand.
	58.26	B	Georgia Lumber Co.—lumber for office bldg.
	4.50		W. H. Harry Co.—tools.
	6.72	B	" " hardware for office building.

	6.72	B	" " hardware for office building.
	30.00	B	Mandeville & Zimmerman—brickwork office "
	343.44	P	Payroll—laying mains.
	248.01	B	" office building.
	5.25	S	" meter installation.
	35.00	B	Mandeville & Zimmerman—brickwork.
	2.75	B	Sundry costs—office building.
	10.66		" tools, material & freights.
	70.29	P	Superior Supply Co.—galvanized pipe & fittings
	40.81	B	" " " steel for office building.
	13.88	S	" " " fittings & C. I. box.
	1.50		" " " tools.
	4.50	B	Standard Fuel & Supply Co.—sand for office building.
	91.60	B	Mandeville & Zimmerman—brickwork.
	1.00	B	Saxon Lime & Lumber Co.—lime.
	3.95		M. G. Whitlow—tools.
May.	106.28	P	Bluefield Hardware Co.—galv. pipe & fittings.
	2.85	B	" " " —nails.
	.74		" " " —tools.
	110.43	B	Citizens Coal & Supply Co.—cement, sand & plaster.
	11.00	B	G. M. Barger—stone for office building.
	339.01	B	Bluefield Tinning Co.—sheet metal work.
	1.68	B	Bailey Lumber Co.—lumber.
	20.00		R. O. Crockett relative J. A. Bailey Spring.
	6.25		C. W. Greaver " " " "
	212.20	B	Georgia Lumber Co.—brick, lumber, plaster, tinning & millwork—office building.
	57.10		W. H. Harry Co. Lawnmower & tools.
1057			
	$4.20	B	W. H. Harry Co.—hardware.
	.82	P	" —fittings.

1914—Plant *Account.—Continued.*

Month.	Amount.	Acct.	Description.
	1.48	S	N. & W. freight on brass goods.
	28.35	B	Phipps & Smoot—brick—office building.
	526.49	P	Payroll—laying mains.
	230.13	B	" new office.
	1.50	B	Sundry costs—new office bldg.
	6.10		Sundry tools—freights & material.
	78.00	B	H. L. withers—plastering.
	52.54	B	Mandeville & Zimmerman—brickwork.
	17.93	P	Superior Supply Co.—glav. pipe & fittings.
	41.25	S	" " " meter tops & rings.
	11.70	P	" " " valve boxes.
	4.95	B	" " " pipe, fittings & steel.
	6.75	B	Standard Fuel & Supply Co.—sand.
	3.50	B	Saxon Lime & Lumber Co.—lime.
	2.55	B	M. G. Whitlow—hardware.
	.65		" tools.
	21.85	F	Bluefield Furniture Co.—office fixtures.
	210.41	P	Bluefield Hardware Co.—galv. pipe, fittings and lead.
	18.01		Bluefield Hardware Co.—tools.
	35.55	B	" " " —galvanized brick siding & nails.
	48.68	B	Bailey Lumber Co. trim for office building.
	122.50		Bluefield Telephone Co.—May & June rent to 19th.
	9.00		J. L. Crockett, chains for auto.
	74.77	B	Citizens Cook & Supply Co.—cement & sand.
	37.73	B	The Enterprise Co.—lumber & trim.
	183.08	B	Georgia Lumber Co.—millwork, etc.

	48.41	B	W. H. Harry.—hardware, etc.
	8.40		" —tools.
	4.90	B	O. V. Hefner—plumbing supplies.
	37.91	S	H. Mueller Co.—service clamps, etc.
	420.00	S	Neptune Meter Co. 50 5/8" meters.
	542.62	P	Payroll—laying mains.
	17.75	S	" meter installation.
	131.63	B	" office building.
	1.50	F	W. S. Anderson—office furniture.
	6.00	B	E. W. Rutherford—inspection of new office.
	4.83		Sundry tools, freights & material.
1058			
	21.35	B	Superior Supply Co.—pipe & fittings office building
	$1.00	S	Superior Supply Co.—check valve.
	9.00	W	" " " —millwork.
	.48	P	" " " —fittings.
	14.21		" " " —tools.
	2.25	B	Standard Fuel & Supply Co.—sand.
	2.55		M. G. Whitlow—tools.
	.30	B	" —hardware.
July	20.80		Bluefield Hardware Co.—tools.
	314.74	P	" " " —explosives, galv. pipe & fittings.
	.83	B	" " " —hardware for office.
	115.41	B	Burgess Electric Co.—wiring, fixtures, labor.
	41.22	P	" " " —wire, etc. for electric valve line.
	1.10	B	Citizens Coal & supply Co.—wood fibre.
	6.50	F	Curtis Pearson Co.—ink well & oak base.
	28.00		J. L. Crockett, lamps, etc. for auto.
	2.00	B	Enterprise Co.—lattice for office building.
	4.45	B	Georgia Lumber Co.—lath & doors.

1914—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
	1.46		W. H. Harry Co.—tools & supplies.
	2.40	B	" hardware for office.
	48.04	S	H. Mueller—curb & corporation cocks.
	840.00	S	Neptune Meter Co.—100—⅝" meters.
	571.33	P	Payroll—laying mains.
	65.71	S	" meter installation.
	29.75	W	" new springs.
	22.58	B	" stable.
	15.37		Sundry materials & freights.
	66.84		Superior Supply Co.—electric forge & tools.
	3 34		" " " —chains for auto.
	138.14	P	" " " —galvanized pipe & fittings.
	1.32	B	" " " —hardware.
	50.25	S	" " " —meter covers & fittings.
	119.00	B	M. G. Whitlow—screens, awnings, etc.
	123.30	B	C. B. Whitlow—oil,, varnish, stain, etc.
Aug.	2.76	B	Bluefield Hardware Co.—nails & red lead.
	34.96	B	W. A. Bodell—plumbing fixtures.
	7.50		Circuit Court Clerk—fees, & tax. Bailey Spring Deed.
	38.27	B	Georgia Lumber Co.—lath, lumber, glass, etc.
	20.90	B	W. H. Harry Co.—hardware.
	1.15		" —tools & supplies.
	677.80	P	Lynchburg Foundry Co.—1488'—6" pipe & specials.
	16.92	S	H. Mueller—corporation cocks.
	12.60		" —tools.
	91.00	B	Payroll—office building.

1059

	$339.79	P	Payroll—laying mains.
	19.02	S	" —meter installation.
	12.25	S	" —making taps.
	98.00	W	" —new springs.
	11.25		" —labor on material & supplies.
	47.68		N. & W. sundry material & supplies.
	27.94		Sundry tools, freights & materials.
	18.00		Frank Brenner—material & supplies.
	214.40	P	Rensselaer Valve Co. 15—6"; 2—10" valves.
	5.35		Superior Supply Co.—tools.
	72.51		" " " —meter tops & rings, valve boxes & fittings.
	76.68	P	" " " —oakum, galv. pipe & fittings.
	2.64	B	" " " —pipe and sheet steel.
	5.06	B	M. G. Whitlow—hardware.
Sept.	120.58	P	Bluefield Hardware Co.—galv. pipe & fittings.
	.96		" " " —bar steel for tools.
	7.77	B	W. A. Bodell—plumbing fixtures.
	3.00	B	W. F. Deitz—plumbing.
	1.00	P	W. H. Harry Co.—fittings.
	6.99	B	" —hardware.
	25.00	P	M. E. Long—blasting.
	37.80	S	Neptune Meter Co.—meters.
	428.99	P	Payroll—laying mains.
	8.22	S	" —making taps.
	8.75	B	" —garage.
	10.50	S	" —meter installation.
	68.42	W	" —new springs.
	3.89		Sundry tools, freights & material.

1914—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
	62.48	P	Superior Supply Co.—lead, oakum, galv. pipe & fittings.
	31.26	B	" " " —gages, pipe & fittings.
	37.53		" " " —meter tops & valve boxes.
	1.90		" " " —tools.
Oct.	5.46		Bluefield Hardware Co.—fittings.
	4.47	B	" " " —speaking tubes.
	.46	W	" " " —explosives.
	7.00	P	" " " — "
	.60	B	W. A. Bodell—ceiling plates.
	3.25	B	Citizens Coal & Supply Co.—cement & sand.
	14.05	F	East End Pharmacy—First Aid Cabinet.
	.75		W. H. Harry—tools & material.
	2.69	B	" " —hardware.
	53.55		N. & W. freight on sewer pipe.
1060			
	$33.66	S	H. Mueller—curb & corporation cocks.
	135.54	P	Payroll—laying mains.
	15.37	W	" —new springs.
	2.78		Sundry tools, freights & material.
	73.22	S	Reynolds & Thornhill—14 pcs. 18" ring pipe.
	99.00	F	Remington Typewriter Co.—1 typewriter.
	29.64	P	Superior Supply Co.—lead, galv. pipe & fittings.
	5.00	B	" " " —steel, galv. pipe & fittings.
	1.80		" " " —tools.
	2.25	B	M. G. Whitlow—hardware.
	40.00	F	C. L. Williams—desk & drains.

Nov.	3.13		Bluefield Hardware Co.—fittings.
	12.31	S	Mueller Co.—stop cocks.
	83.37	P	Payroll—laying mains.
	16.98	S	" —meter installation.
	28.00	F	Superior Supply Co.—4 fire extinguishers.
	37.95	S	" " " —meter tops & rings.
Dec.	8.65		Sundry tools, material & supplies.
	8.50	F	Superior Supply Co.—1 fire extinguisher.
	19.80	S	" " " —meter tops & rings.
	8.83		Bluefield Hardware Co.—tools.
	29.13	P	Payroll—laying mains.
	26.08	S	" —meter installation.
	20.50	W	" —new springs.
	10.00	B	" —office building.
	425.16	B	W. F. Deitz—plumbing office heating.
	10.00	R	W. T. Bailey—1.11 acres additiona- land Spring #18.
	$15,201.62		
	370.81		Deduct for materials sold to City, Companies & individuals.
	$14,830.81		

1914—Income.

Month.	Amount.	Acct.	Source.
	$8,167.08		Flat rate services.
	28,492.30		Metered services.
	3,142.50		Fire hydrant rental.
	55.00		Rent from Bailey Farm.
	$39,656.88—Total.		

1914—Operation.

Month.	Amount.	Description.
Jan.	12.00	Bluefield Chamber of Commerce—Membership.
	7.50	Curtis Pearson Co.—Journal & Day book.
	103.42	Flat Top Fuel Co.—2 carloads coal.
	40.03	N. & W. freight on coal.
	75.00	Payroll—inspection.
	138.02	" —pumping.
	22.58	Sundry office expense.
	2.33	Standard Oil Co.—oil.
	12.61	Standard Fuel & Supply Co.—feed.
Feb.	25.00	Geo. D. Barnard Co.—letterheads.
	1.90	John Crockett—gasoline.
	16.00	Daily Tel. Ptg. Co.—postals & bills.
	150.00	H. B. Hayes—Audit 1913.
	7.42	State & City Auto tax.
	75.00	Payroll—inspection.
	130.73	" —pumping.
	6.83	State of W. Virginia—Workmen's Compensation Fund.
	5.18	" " " " " "
	32.94	Sundry office expense.
	1.65	Standard Oil Co.—oil.
	6.56	Standard Fuel & Supply Co.—feed.
	.88	State of W. Virginia—Workmen's Compensation Fund.
Mar.	9.33	J. L. Crockett—auto storage.
	1.10	Curtis Pearson Co.—stationery.
	32.00	Daily Tel. Ptg. Co.—bills, etc.

	49.32	Flat Top Fuel Co. 1 carload coal.
	40.50	Longacre & Ewing—Accident Insurance.
	.97	N. & W. freight on stationery.
	75.00	Payroll—inspection.
	123.88	" —pumping.
	6.79	State of W. Virginia—Workmen's Compensation Fund.
	29.71	Sundry office expense.
	5.00	N. & W. rent of 6" pipe line—Right of Way.
	7.81	Standard Oil Co.—gasoline.
	7.19	Standard Fuel & Supply Co.—feed.
April	7.00	J. L. Crockett—auto storage.
	24.00	Daily Tel. Ptg. Co.—bills, envelopes, etc.
	8.18	Office expense.
	58.60	N. &. W. freight on coal.
	75.00	Payroll—inspection.
	113.67	" —pumping.
	32.03	Sundry office expense.
1062	11.14	Standard Oil Co.—gasoline.
	5.93	Standard Fuel & Supply Co.—feed.
May	$5.00	Effie J. Cooper—tool house rent for auto.
	7.00	J. L. Crockett—auto storage.
	25.00	Daily Tel. Ptg. Co.—postals.
	.45	W. H. Harry—stationery supplies.
	5.95	Indian Refining Co.—gasoline.
	156.94	N. & W. freight on coal.
	75.00	Payroll—inspection.
	116.10	" —pumping.
	15.00	" —hauling coal.
	9.30	State of W. Virginia—Workmen's Compensation Fund.
	29.25	Sundry office expense.

1914—Plant Account.—*Continued.*

1914—Operation.—*Continued.*

Month.	Amount.	Description.
	1.75	Standard Fuel & Supply Co.—feed.
	87.87	U. S. Excise income tax.
June	84.55	G. D. Barnard Co.—stationery & supplies.
	13.50	Curtis Pearson Co.—stationery & supplies.
	7.00	J. L. Crockett—auto storage.
	19.25	Daily Tel. Ptg. Co.—postals, bills, etc.
	4.20	Indian Refining Co.—gasoline.
	3.22	Office expense.
	32.60	N. & W. freight on coal.
	75.00	Payroll—inspection.
	172.99	" —pumping.
	11.28	State of W. Virginia—Workmen's Compensation Fund.
	26.89	Sundry office expense.
	.60	Superior Supply Co.—waste.
	48.04	Standard Oil Co.—oil.
	6.95	Standard Fuel & Supply Co.—feed.
	22.30	J. M. Wirgman—traveling expense.
	120.00	State of W. Virginia—license tax.
	10.36	" " " " Workmen's Compensation Fund.
July	29.42	W. C. Atwater Co.—coal.
	74.62	G. A. Bailey—hauling coal.
	1.50	Bluefield Furniture Co.—polish for furniture.
	10.22	Citizens Coal & Supply Co.—coal.
	10.00	Curtis Pearson Co.—stationery, etc.
	8.25	J. L. Crockett—auto storage & gasoline.

	34.00	Daily Tel. Ptg. Co.—postals, bills, etc.
	3.20	India Refining Co.—gasoline.
	34.92	N. & W. freight on coal.
	10.00	State of W. Virginia—auto license.
	10.50	City of Bluefield " "
	75.00	Payroll—inspection.
	255.00	" pumping.
	18.00	" hauling coal.
	13.15	State of W. Virginia—Workmen's Compensation Fund.
	33.26	Sundry office expense.
	10.50	City of Bluefield—Charter license.
	8.36	Standard Fuel & Supplying Co.—feed.
1063	12.84	Standard Oil Co.—Gasoline & oil.
	.50	M. G. Whitlow—oil.
Aug.	57.99	N. & W. freight on coal.
	72.90	G. A. Bailey—hauling coal.
	15.75	Bluefield Hardware Co.—packing.
	12.50	Daily Tel. Printing Co.—postals.
	40.00	E. H. Easley—plumbers' bonds.
	4.38	Flat Top Grocery Co.—dust absorbant.
	7.11	Eimer & Amond—laboratory chemicals.
	68.89	N. & W. freight on coal.
	75.00	Payroll—inspection.
	282.80	" —pumping.
	39.38	" —auto driver.
	11.41	State of W. Virginia—Workmen's Compensation Fund.
	40.02	Sundry Office expense.
	19.00	S. A. Schwarz Oil Co.—auto oil.
	25.05	Standard Oil Co.—oil & gasoline.
	1.15	M. G. Whitlow—oil.

1914—Plant Account.—*Continued.*

1914—Operation.—*Continued.*

Month.	Amount.	Description.
Sept.	196.42	W. C. Atwater—6 carloads coal & freight.
	194.85	G. A. Bailey—hauling coal.
	.40	Bluefield Hardware Co.—waste.
	8.00	Daily Tel. Ptg. Co.—envelopes, etc.
	5.61	Eimer & Amond—laboratory supplies.
	6.48	Office Expense.
	123.55	Expense witnesses & Jurors at Princeton. Hardy case.
	30.97	N. & W. freight on coal.
	.95	Curtis Pearson Co.—stationery.
	.85	Sundry office expense.
	75.00	Payroll—inspection.
	319.96	" —pumping.
	11.12	State of W. Virginia—Workmen's Compensation fund.
	38.28	Sundry office expense.
	10.00	C. P. Clayton—stable expense.
	108.30	H. A. Ritz—Costs in Hardy Case.
	100.00	Sanders & Crockett—fee in Hardy case.
	32.17	Standard Oil Co.—oil & gasoline.
	231.96	Sandy Ridge Coal & Coke Co.—coal.
Oct.	174.25	W. C. Atwater—6 carloads coal & freight.
	80.35	G. A. Bailey—hauling coal.
	4.02	Citizens Coal & Supply Co.—coal.
	5.45	Curtis-Pearson Co. stationery & supplies.
	25.00	Daily Tel. Ptg. Co., bills, postals, etc.
	49.30	Flat Top Fuel Co. 1 carload coal.

	75.00	Payroll—inspection.
	277.35	" pumping.
1064	$8.90	State of W. Virginia—Workmen's Compensation Fund.
	35.48	Sundry office expense.
	200.00	J. M. Sanders—retaining fee.
	48.71	Standard Oil Co.—oil & gasoline.
	19.50	Stone Ptg. Co.—4 meter reading books.
	2.02	Superior Supply Co.—oil & grease for auto.
Nov.	55.86	W. C. Atwater—2 carloads coal.
	60.53	N. & W. freight on coal.
	38.00	Citizens Coal & Supply Co.—coal.
	188.40	G. A. Bailey—hauling coal.
	4.45	Curtis Pearson Co.—office supplies.
	108.99	Flat Top Coal Co.—coal.
	316.86	Payroll—pumping.
	75.00	" —inspection.
	6.96	State of W. Virginia—Workmen's Compensation Fund.
	38.19	Sudry office expense.
	75.25	N. & W. freight on coal.
	22.22	Coal.
	21.46	Standard Oil Co.—oil & gasoline.
	6.20	Superior Supply Co.—packing.
	1.75	West Disinfecting Co.—disinfectant.
Dec.	43.71	Sundry office expense.
	4.82	State of W. Virgina—Workmen's Compensation Fund.
	3.10	Standard Oil Co.—gasoline.
	2,196.00	State of W. Virginia—pipe line tax.
	34.20	" " " " —special license tax.
	196.14	W. C. Atwater—7 carloads coal.
	7.70	Curtis Pearson Co.—journal.

1914—Plant Account.—*Continued.*

1914—Operation.—*Continued.*

Month.	Amount.	Description.
	75.00	Payroll—inspection.
	157.05	" pumping.
	15.20	" general labor.
	45.25	Daily Tel. Ptg. Co.—postals, bills, etc.
	79.91	Flat Top Fuel Co.—1 carload coal.
	2.88	Office expense.
	189.55	Costs in suit and damage—Walker & Garrett cases.
	2,400.00	W. McCarthy—salary for year.
	1,800.00	A. L. Rhoads " " "
	600.00	Glenne Woodyard " " "
	$15,590.47	
	4,800.00	Philadelphia office salaries charged.
	400.00	" " rent "
	$20,790.47	Total.
1065		
Jan.	$3.76	Bluefield Hardware Co.—material for pipe line maintenance.
	2.00	Citizens Coal & Supply Co.—sand for pipe line repairs.
	76.58	Longacre & Ewing—fire insurance.
	203.46	Payroll—pipe line maintenance.
	16.00	" meters "
	15.00	" Ada Station "
	22.63	" Gravity springs maintenance.
	16.50	" new springs "
	1.80	Baker Stone Co.—stone for pipe line repairs.

	1.80	Baker Stone Co.—stone for pipe line repair.
	.68	Superior Supply Co.—black pipe.
Feb.	17.03	Buffalo Meter Co.—repair parts.
	14.75	Georgia Lumber Co.—brick & fire clay for Ada.
	.80	Hersey Mfg. Co.—repair parts.
	1.20	W. H. Harry—supplies for pipe line repairs.
	151.25	McNaughton Grate Bar Co.—rocker grates—Ada.
	.79	Neptune Meter Co. repair parts.
	3.12	National " " " "
	1.08	Pittsburg " " " "
	1.50	Phelps Furniture Co.—repairing book case.
	198.96	Payroll—pipe line maintenance.
	12.00	" meter maintenance.
	14.00	" Ada Station "
	28.63	" Springs "
	45.56	Superior Supply Co.—gaskets, cylinder head & bolts.
March	16.03	Buffalo Meter Co.—repair parts.
	1.80	W. H. Harry—supplies for pipe line repair.
	24.33	National Meter Co.—repair parts.
	40.00	Longacre & Ewing—auto insurance.
	215.79	Payroll—pipe line maintenance.
	12.00	" meter "
	14.00	" Ada Station "
	17.50	" Gravity Springs maintenance.
	13.50	" New Springs "
	6.17	Pittsburgh Meter Co.—repair parts.
	.35	Superior Supply Co.—valve box cap.
April	2.00	Burroughs Adding Machine Co.—repairs.
	4.56	W. H. Harry Co.—material for pipe line repairs.
	15.00	Longacre & Ewing—insurance.

1914—Plant Account.—*Continued.*

1914—Operation.—*Continued.*

Month.	Amount.	Description.
	219.10	Payroll—pipe line maintenance.
	6.00	" meter "
	12.25	" gravity springs maintenance.
	10.50	" new springs "
1066	4.00	" Ada Station "
	$10.00	Superior Supply Co.—steam hose & graphite—Ada.
May	2.60	Bluefield Hardware Co.—valve for meter repair.
	8.73	" " " —galv. pipe for stable.
	1.25	" " " —lantern globes.
	.93	W. H. Harry—material for repairs.
	212.33	Payroll—pipe line maintenance.
	20.00	" gravity spring "
	28.98	" meters "
	38.40	" Ada Station "
	1.43	Superior Supply Co.—bolts, fittings, etc.
June	2.40	Appalachian Garage—auto repair.
	6.99	Citizens Coal & Sup. Co.—cement & sand pipe line repair.
	3.90	Garmon Meter Co.—repair parts.
	5.10	Goodson & Moore—oil for pipe line repair.
	15.00	National Meter Co.—Meter repair parts.
	191.86	Payroll pipe line maintenance.
	12.00	" Ada station "
	16.50	" Beaver Pond station maintenance.
	10.00	" Meter maintenance.
	24.50	" springs "

	3.25	Superior Supply Co.—packing & foot valve.
	10.50	" " " paint for Beaver Pond machine.
	.80	M. G. Whitlow—Supplies for repair.
	15.92	Buffalo Meter Co.—repair parts.
	4.17	Bluefield Hardware Co.—Auto repair supplies.
	3.65	Citizens Coal & Supply Co.—sand & cement for pipe line.
	6.45	" " " Supply Co.—cement for springs.
	16.70	Neptune Meter Co.—repair parts.
	214.35	National " " " "
	371.19	Payroll—pipe line maintenance.
	18.00	" meters "
	28.00	" gravity springs maintenance.
	27.13	" new springs "
	.75	Superior Supply Co.—fittings for meter repair.
	27.44	" " " —packing gaskets & fittings.
	52.55	Buffalo Meter Co.—repair parts.
	10.69	Citizens Coal & Supply Co.—sand & cement—pipe line.
	.63	W. H. Harry—supplies for Ada pump repair.
	43.48	National Meter Co.—repair parts.
	283.51	Payroll—pipe line maintenance.
	4.48	" Ada Station "
	20.93	" Meter "
1067	$8.96	Payroll Beaver Pond Station maintenance.
	37.93	" Gravity Springs "
	143.02	Longacre & Ewing—insurance.
	4.28	Superior Supply Co.—pipe & fittings for repair.
	1.38	" " " sheet packing.
Sept.	7.40	Bluefield Hardware Co.—lead pipe for service & repair.
	10.72	Citizens Coal & Supply Co.—sand & cement, pipe line.
	10.40	Gamon Meter Co.—repair parts.

1914—Plant Account.—*Continued.*

1914—Operation.—*Continued.*

Month.	Amount.	Description.
	.20	W. H. Harry—fittings.
	49.20	Neptune Meter Co.—repair parts.
	20.31	National Meter Co.— " "
	275.87	Payroll—pipe line maintenance.
	59.74	" meter maintenance.
	18.52	" Beaver Pond station maintenance.
	21.00	" Gravity Springs "
	6.27	Pittsburgh Meter Co.—repair parts.
	6.48	Superior Supply Co.—gaskets & packing, Ada.
	1.38	" " " —packing, Beaver Pond.
	7.63	Thomson Meter Co.—repair parts.
Oct.	34.80	Buffalo Meter Co.—repair parts.
	3.00	G. M. Barger—stone for pipe line repair.
	.63	W. A. Bodell—lead pipe.
	4.20	Longacre & Ewing—fire insurance.
	3.23	Citizens Coal & Supply Co.—cement.
	1.05	W. H.Harry—supplies for repairs.
	4.00	N. & W. demurrage on coal.
	2.00	Geo. McCullough—spark plugs for auto.
	16.99	Neptune Meter Co.—repair parts.
	49.50	National " " " "
	416.72	Payroll—pipe line maintenance.
	80.43	" meter maintenance.
	8.96	" Beaver Pond station maintenance.
	45.37	" new springs maintenance.

	21.00	" gravity springs "
	6.83	Pittsburgh Meter Co.—repair parts.
	6.18	Superior Supply Co.—fittings for meter repair.
Nov.	5.00	G. M. Barger—stone for pipe line repair.
	3.60	W. A. Bodell—stop cocks for meter repair.
	3.86	J. L. Crockett—auto repair.
	5.80	Citizens Coal & Supply Co.—sand & cement, pipe line.
	234.24	Payroll—pipe line maintenance.
	14.00	" gravity springs "
	65.77	" meter maintenance.
	14.51	" Ada Station "
1068	$27.00	Payroll—new springs maintenance.
	9.26	" Beaver Pond "
	10.30	Sundry maintenance charges.
	1.00	J. G. Snell—motor truck repair.
	2.21	Superior Supply Co.—valves for meter repair.
Dec.	32.37	National Meter Co.—repair parts.
	3.42	Pittsburgh " " " "
	3.98	Bluefield Hardware Co.—fittings for meter repair.
	2.75	Baker Stone Co.—stone for pipe line repair.
	3.78	Citizens Supply Co.—cement & sand—pipe line repair.
	161.65	Payroll—pipe line maintenance.
	82.78	" meter maintenance.
	4.48	" Ada Station "
	16.10	" Gravity Springs maintenance.
	14.08	Georgia Lumber Co.—flooring for Ada Spring House.
	$5,379.95	Total.

Résumé of Plant account, Operation, and Income for 1914.

Cost of Plant and Property incurred prior to 1914...		$384,606.17
" " " " " " during year....		14,830.81
Total Cost of Plant and Property at end of Year		$399,436.98
Income from Service During Year		$39,856.88
Expenditure for Operation During Year	$20,790.47	
" " Maintenance " "	5,379.95	
Total Expenditure for Operation and Maintenance During Year		26,170.42
Net Income Applicable to Depreciation and Dividends		$13,686.46

1069

1915.

In 1915 practically all the new work had to do with the extension of mains and installation of services and meters. Three fire hydrants were installed and paid for by the city. A liquid chlorine sterilization plant was installed at Ada Station.

Of the revenue for the year 7.4% was derived from fire hydrant rental; 22% from flat rate consumption, and 70.6% from metered consumption. A rental of $75.00 from the tenants of the Bailey farm has been included in the total income.

No dividend was declared for the year 1915.

1915—Plant Account.

Month.	Amount.	Acct.	Description.
Jan.	$11.25	W	W. T. Bailey—1.11 acres land and rec. deed.
	64.00	E	E. A. Bruce—new water maps.
	43.44	P	Payroll—laying mains.
	8.21	P	Superior Supply Co.—galv. pipe & fittings.
	19.80	S	" " " —meter tops & rings.
Feb.	41.84	P	Bluefield Hardware Co.—galv. pipe & fittings.
	1.50		W. H. Harry—tools & fittings for meters.
	64.00	E	E. A. Bruce—new water maps.
	29.29	S	H. Mueller—curb & corporation cocks.
	40.50	P	Payroll—laying mains.
	8.75	S	" meter installations
	22.55	P	Superior Supply Co.—valve boxes, galv. pipe & fittings.
March.	5.46	S	Bluefield Hardware Co. galv. pipe & fittings.
	21.54	P	" " " " " " "
	.89		" " " tools.
	75.00	F	Richard W. Cubbage—on new adding machine.
	24.56	P	Payroll—laying mains.
	17.50	S	" meter installation.
	4.50	B	" office building.
	12.00	E	E. A. Bruce—new water maps.
	2.04	P	Superior Supply Co.—galv. pipe.
	11.68	P	" " " —lead.
	19.80	S	" " " —meter tops & rings.
April.	73.77	P	Payroll—laying mains.
	7.00	S	" meter installation.
	4.75	E	G. H. Hill—blueprints.
	54.24	S	Superior Supply Co.—meter tops & rings.

1915—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
	210.00	S	Thomson Meter Co.—25 ⅝" meters.
	95.69	P	Bluefield Hardware Co.—galv. pipe & fittings.
May.	151.86		" " " 400'—2½" hose & tools.
	16.91	P	" " " galv. pipe & fittings.
	2.00		W. H. Harry—tools & grass seed.
	3.00	W	" —padlocks for spring houses.
	102.50		Leavitt Machine Co.—valve reseating outfit.
	25.05	S	Markel Bros. service fittings.
	107.60	S	Mueller Co.—corporation & curb cocks.
	78.47	P	Payroll—laying mains.
	18.38	S	" meter installation.
	14.58		Sundry tools, material & supplies.
	11.16	P	Superior Supply Co.—valve boxes.
	19.80	S	" " " —meter tops & lids.
	15.34	P	" " " —galv. pipe & fittings.
	210.00	S	Thomson Meter Co.—25 ⅝" meters.
	26.00	E	H. O. Wiles—blueprints of city map.
June.	$45.00	M	Arnold Hoffman Co.—liquid chlorine cylinders.
	.98	P	Bluefield Hardware Co.—fittings.
1071	4.66	S	" " " —galv. pipe for meter installation.
	14.45	M	Citizens Coal & Supply Co.—cement for sterilization plant.
	1.50		Curtis Pearson Co.—punch.
	60.13	P	Payroll—laying mains.
	19.25	S	" meter installation.
	1.75		M. G. Whitlow—stepladder.
	2.49	S	Superior Supply Co.—fittings.

	49.50	S	" " " —meter tops & lids.
	7.72	M	" " " —sterilization plant supplies.
July.	2.00	W	Baker Stone Co.—stone for springs.
	3.01		Bluefield Hardware Co.—tools.
	36.00	M	" " " platform scale—purification plant.
	232.12	P	" " " galvanized pipe.
	16.10	M	" Brick Co. brick for purification plant.
	3.50		Curtis-Pearson Co.—punch.
	205.13	F	Eimer & Amend—laboratory equipment.
	15.69	M	" " purification plant.
	.63	M	Georgia Lumber Co.—lumber for purification pl.
	13.15	W	" " " —sewer pipe & cement.
	1.65	M	W. H. Harry—hardware for purification plant.
	18.51	S	Hayes Mfg. Co.—stop cocks.
	25.00	R	J. T. Bailey—deed for land purchased for chlorinator house.
	2.50	P	Tony Britt—hauling pipe.
	1.25	R	County Clerk—recording Bailey deed.
	19.00	P	H. Mueller—pressure regulator & strainer.
	150.93	P	Payroll—laying mains.
	82.69	M	" —sterilization plant.
	37.38		Sundry tools, freights, material & supplies.
	20.41	P	Superior Supply Co.—fittings & valves.
	36.40		" " " —lead furnace & tools.
	427.20	S	Thomson Meter Co.—50 5/8" meters.
	7.24		Bluefield Hardware Co.—tools.
	25.43	P	" " " —galv. pipe & fittings.
	20.52	P	" " " " " " " "
	17.73	S	" Plumbing Co.—service supplies.
	46.78	S	W. A. Bodell—lead pipe, curb cocks, etc.
	135.83	S	Chattanooga Sewer Pipe & Fire Brick Co.—meter boxes.

Month.	Amount.	Acct.	Description.
	$6.05	E	Central Arts Sta. Co.—drawing supplies.
	3.40	F	Curtis Perason Co.—stationery rack.
	65.69	S	W. F. Deitz—lead pipe & service fittings.
	8.01	F	Eimer & Amond laboratory equipment.
	1,080.66	M	Electric—Bleach Gas Co.—purification plant.
	8.57	P	Georgia Lumber Co.—sand & cement.
	2.39	S	O. V. Hefner—lead pipe & stop cock.
	25.75	B	Keys Planing Mill—walnut door.
	12.60	P	Lynchburg Foundry Co.—specials.
	57.15	S	N. & W. freight on sewer pipe & lead pipe.
	150.93	S	Markel Bros.—lead pipe.
	102.53	P	Payroll—laying mains.
	57.18	S	" —service pipes.
	62.00	S	" —meter installation.
	6.75	M	" —purification plant.
	178.50	F	" —office furniture & fixtures.
	54.00	P	A. P. Smith Mfg. Co. 2—10" x 6" valves.
	82.50	S	Superior Supply Co.—meter tops & rings.
	8.40	P	" " " —galv. pipe & fittings.
	840.00	S	Thomson Meter Co.—100—⅝" meters.
	57.12	S	Midway Water Co.—meters.
	587.66	P	" " " —pipe, lead, specials, etc.
Sept.	8.70	F	Bluefield Gas & Power Co.—laboratory equip.
	60.25	P	" Hardware Co.—galvanized pipe.
	.60		" " " —tools.
	44.17	P	" " " —lead, galv. pipe & fittings.
	8.00	M	W. F. Deitz—closet tank for purification pit.

	3.10		Georgia Lumber Co.—sand & cement.
	4.00		W. H. Harry—sundry material.
	47.08	S	H. Mueller—curb & corporation cocks.
	94.11	P	Payroll—laying mains.
	68.56	S	" —meter installation.
	35.15	S	" —services.
	245.00	P	Rensselaer Valve Co.—10—4" hydrants.
	72.60	S	Superior Supply Co.—meter tops & rings.
	8.66	P	" " " —galv. pipe & fittings.
	28.70		" " " —steam hose, etc.
	1.47		" " " —fittings for laboratory equipment.
	9.00	B	M. G. Whitlow—door mortise set.
	40.16	F	C. B. Whitlow—office furniture.
Oct.	51.18		Bluefield Hardware Co.—wheel barrows, picks & shovels.
	52.59	P	" " " —galv. pipe & fittings.
	6.39	P	" " " —galv. pipe.
1073			
	$6.39	P	Bluefield Hardware Co.—galv. pipe.
	6.65		W. H. Harry—tools.
	210.00	P	Leadite Co.—leadite.
	75.00	F	J. M. Wirgman—lumber for office furniture.
	616.05	P	Lynchburg Foundry Co.—1,500'—6" pipe.
	62.77	P	N. & W. Freight on pipe & leadite.
	40.26		N. & W. " " brick.
	19.56	S	Payroll—services.
	28.46	S	" meter installation.
	18.00		" unloading brick.
	166.00		Richlands Brick Corp.—brick.
	22.44	S	Superior Supply Co.—meter tops & rings & fittings.
Nov.	10.21		Bluefield Hardware Co.—tools.

1915—Plant Account.—*Continued.*

Month.	Amount.	Acct.	Description.
	3,726.19	P	Lynchburg Foundry Co. 5,004′—10″ pipe.
	132.13	P	N. & W. freight on pipe.
	5.78	S	H. Mueller—service fittings.
	6.82	S	Payroll—meter installation.
	21.07	S	" services.
	470.42	P	" laying mains.
	28.51	B	Pittsburg Plate Glass Co.—plate glass for office.
	50.00	L	Sanders & Crockett—legal costs in transferring Midway Water Co.
	36.28	S	Superior Supply Co.—meter tops & rings & galv. pipe.
	6.03		" " " —tools.
	9.99	P	" " " —packing & fittings.
	848.40		Thomson Meter Co.—101—⅝″ meters.
	12.40		M. G. Whitlow—tools.
Dec.	2.15		Bluefield Hardware Co.—tools.
	4.37	B	" " " —galv. pipe & fittings for office.
	50.00	M	Bristol Co.—recording gages for purif. plant.
	200.00	P	Leadite Co.—leadite.
	366.66	P	Lynchburg Foundry Co.—specials.
	26.73	P	N. & W. freight on specials.
	8.40	S	Neptune Meter Co.—⅝″ meter.
	19.47	S	Payroll—meter installation.
	524.63	P	" laying mains.
	11.94	S	" services.
	36.42	P	Rensselaer Valve Co. 1—6″ extra heavy valve.
1074	$26.88		Sundry material, tools & freights.

16.71 P Superior Supply Co.—[illegible]

16.71	P	Superior Supply Co.—hemp & fittings.
840.00	S	Thomson Meter Co.—100—⅝" meters.
$16,618.50		
351.68		Deduct for materials sold to City, companies and individuals.
$16,266.82—Total.		

1915—Income.

Amount.	Source.
$9,371.27	Flat Rate services.
30,298.26	Metered services.
3,150.34	Fire hydrant rental.
75.00	Rent from Bailey Farm.
$42,894.87—Total.	

1915—Operation.

Month.	Amount.	Description.
Jan.	$65.32	W. C. Atwater—1 carload coal & freight.
	3.20	Curtis-Pearson Co.—stationery & supplies.
	75.00	Payroll—inspection.
	95.41	" —pumping.
	10.50	" —meter installation.
	4.47	State of W. Virginia—Workmen's Compensation Fund.
	51.33	Sundry office expense.
	3.16	Superior Supply Co.—packing.
Feb.	60.50	W. C. Atwater—1 carload coal & freight.
	1.00	Curtis-Pearson Co.—office supplies.

1915—Plant Account.—*Continued.*

1915—Operation.—*Continued.*

Month.	Amount.	Description.
	8.50	City of Bluefield—Expense City vs. Company.
	54.50	Daily Tel. Ptg. Co.—postals, bills, forms, etc.
	1.35	East End Pharmacy—office supplies.
	76.19	Flat Top Fuel Co.—1 carload coal & freight.
1075	$1.30	W. H. Harry—2 brooms.
	75.00	Payroll—inspection.
	83.64	" —pumping.
	4.42	State of W. Virginia Workmen's Compensation Fund.
	34.97	Sundry office expense.
	2.90	Standard Oil Co.—gasoline.
March.	2.00	Burgess Electric Co.—dry batteries.
	7.60	Curtis Pearson Co.—office supplies.
	11.50	Daily Te. Ptg. Co.—receipts, forms, etc.
	4.09	State of W. Virginia—Workmen's Compensation Fund.
	170.00	H. B. Hayes—1914 Audit.
	1.10	W. H. Harry—tools.
	6.89	Office expense.
	127.56	Payroll—pumping.
	75.00	" —inspection.
	25.21	Sundry office expense.
	5.00	N. & W. 6" pipe line right of way.
	13.63	Standard Oil Co.—gasoline.
	3.75	Superior Supply Co.—tool repair parts.
	.66	" " " —fittings for meters.
	12.60	" " " —packing for Ada pump.

April.	2.05	Curtis-Pearson Co.—office supplies.
	60.50	Daily Tel. Ptg. Co.—postals, bills, forms, etc.
	29.49	Domestic Coal Co.—coal.
	4.38	Flat Top Gro. Co. dust absorbent.
	.60	W. H. Harry—3 buckets.
	31.95	N. & W. freight on coal.
	3.50	Stone, copy application for increased rates.
	71.65	Legal expense—suit City vs. Co.
	4.67	St. of W. Virginia—Workmen's Compensation Fund.
	75.00	Payroll—inspection.
	104.00	" —pumping.
	26.13	Sundry office expense.
	84.68	Expense—P. S. hearing at Charleston City vs. Co.
	23.37	L. W. Stanard—Copy of testimony City vs. Co.
	52.70	W. H. Triol Expense City vs. Co.
	12.10	Standard Oil Co.—oil & gasoline.
May.	3.05	Curtis Pearson Co.—office supplies.
	13.00	Daily Tel. Ptg. Co.—postals.
	185.62	Flat Top Fuel Co. 2 carloads coal.
	62.41	Garlock Packing Co.—packing—Ada pump.
	122.69	W. McCarthy—traveling expense re. to rate case.
	75.00	Payroll—inspection.
	131.89	" —pumping.
	15.00	" —office expense.
	4.66	St. of W. Virginia—Workmen's Compensation Fund.
1076	$35.75	Sundry Office expense.
	33.13	Standard Oil Co.—oil & gasoline.
	5.87	Superior Supply Co.—packing for Ada pump.
June.	29.93	Arnold Hoffman Co.—liquid chlorine.
	2.00	Burroughs Co.—Adding machine repair.

1915—Plant Account.—*Continued.*

1915—Operation.—*Continued.*

Month.	Amount.	Description.
	90.68	U. S. Special Excise Tax.
	.50	Curtis Pearson & Co.—pencils.
	19.25	Daily Tel. Ptg. Co.—bills & postals.
	240.00	St. of W. Va.—license tax.
	152.12	Flat Top Fuel Co.—2 carloads coal.
	2.25	Indian Refining Co.—gasoline.
	6.53	Office Expense.
	5.42	St. of W. Va. Workmen's Compensation Fund.
	75.00	Payroll—inspection.
	201.66	" —Pumping.
	18.00	" —Office Expense.
	16.20	Sundry office expense.
	45.00	Sanders & Crockett—Copies of Brief—City Case.
	19.75	Standard Oil Co.—oil & gasoline.
	.60	Superior Supply Co.—waste.
	12.88	" " " —pump packing.
July.	67.12	G. A. Bailey—hauling coal.
	2.25	Curtis Pearson Co.—office supplies.
	6.00	Daily Tel. Ptg. Co.—Printing.
	75.00	Electric Bleach Gas Co.—3 cyl. chlorine.
	93.62	Flat Top Coal Co. 2 carloads coal.
	6.30	Int. Seal & Knot Prot. Co.—seals & tags.
	8.68	Longacre & Ewing—cable charges.
	19.72	Southern Express Co.—express on chlorine for purification plant.
	31.10	N. & W. freight on coal.

	10.00	State Auditor—auto license.
	10.50	City—Auto License.
	10.50	" —corporation license.
	23.00	Albshire & Godbey—auto hire for inventory.
	46.77	Payroll—Inventory by A. & B.
	75.00	" —inspection.
	252.78	" —pumping.
	25.00	Public Utilities Commission—Annual dues.
	.80	" " " —meter inspection & sealing expense.
	45.11	Sundry office expense.
	7.26	St. of W. Virginia—Workmen's Compensation Fund.
1077	28.17	Standard Oil Co.—oil & gasoline.
	22.50	H. O. Wiles—6 blueprints city map for inventory:
Aug.	$80.60	W. C. Atwater—coal & freight.
	147.63	G. A. Bailey—hauling coal.
	4.27	Bluefield Hardware Co.—packing.
	6.10	Curtis-Pearson Co. office supplies.
	5.00	Daily Tel. Ptg. Co.—envelopes & water records.
	28.00	W. F. Deitz, expense, Charleston—City case.
	25.00	J. A. Donohue—vauling real estate.
	25.00	E. H. Easley " " "
	103.19	Flat Top Fuel Co. 2 carloads coal.
	5.00	Home Insurance Agency—plumbing bonds.
	2.25	Indian Refining Co.—gasoline
	55.56	N. & W. freight on coal.
	1.25	County Clerk, recording deed—Midway Water Co.
	75.00	Payroll—inspection.
	323.98	" pumping.
	21.00	" inventory (A. & B.).
	25.28	Sundry office expense.

1915—Plant Account.—*Continued.*

1915—Operation.—*Continued.*

Month.	Amount.	Description.
	51.87	Sandy Ridge Coal & Coke Co.—coal & freight.
	24.39	Standard Oil Co.—oil & gasoline.
	35.71	Standard Fuel & Supply Co.—coal.
	9.72	State of W. Virginia—Workmen's Compensation Fund.
	10.80	H. O. Wiles—Contour work for inventory.
Sept.	129.96	W. C. Atwater Co.—2 carload coal & freight.
	71.25	G. &. Bailey—hauling coal.
	1.66	Bluefield Hardware Co.—laboratory supplies.
	2.50	Curtis-Pearson Co.—office supplies.
	55.44	Flat Top Fuel Co.—1 carload coal.
	10.00	Home Insurance Agency—Plumbers' Bonds.
	31.82	N. & W. freight on coal.
	75.00	Payroll inspection.
	300.10	" pumping.
	31.58	Sundry office expense.
	8.61	Standard Fuel & Supply Co.—coal.
	26.74	Standard Oil Co.—oil & gasoline.
Oct.	100.70	W. C. Atwater—coal & freight.
	4.30	Curtis Pearson Co.—office supplies.
	7.50	Daily Tel. Ptg. Co.—printing.
	75.00	Payroll—inspection.
	254.19	" pumping.
	11.30	" inventory—stenographer.
	34.41	Sundry office expense.
	18.36	" rate case expense.
	58.50	Sandy Ridge Fuel Co.—coal.

	61.62	Standard Oil Co.
	11.62	Standard Fuel & Supply Co.—coal.
	10.88	St. of W. Virginia—Workmen's Compensation Fund.
1078	$24.00	Stone Printing Co.—6 meter reading books.
	32.99	W. H. Triol—traveling expenses in rate case.
	2.41	Whitall-Tatum Co.—laboratory supplies.
Nov.	105.91	W. C. Atwater—coal & freight.
	148.63	G. A. Bailey—hauling coal.
	121.57	Citizens Coal & Supply Co.—coal.
	5.20	Curtis Pearson Co.—office supplies.
	15.25	Daily Tel. Ptg. Co.—postals & blanks.
	10.00	Home Ins. Agency—plumber's bonds.
	75.00	Payroll—inspection.
	280.46	" pumping.
	45.20	" stenographer in rate case.
	31.36	Sundry office expense.
	5.00	N. & W. 6" pipe & line right of way.
	200.00	Sanders & Crockett—retaining fee.
	88.10	Sandy Ridge Fuel Co.—coal.
	4.00	A. R. Shepherd P. S. inspection—meter test records.
	41.14	Standard Fuel & Supply Co.—coal.
	61.99	Standard Oil Co.—oil & gasoline.
	9.74	St. of W. Virginia—Workmen's Compensation Fund.
	13.00	Stone Ptg. Co. 4 meter reading books.
	14.03	Superior Supply Co.—pump packing.
Dec.	36.10	P. S. Com.—special license fee.
	3,062.50	State of W. Virginia—pipe line tax.
	1,035.21	Alvord & Burdick inventory.
	56.78	G. A. Bailey—hauling coal.
	2.05	C. E. Bailey—blueprints for inventory.

1915—Plant Account.—*Continued.*

1915—Operation.—*Continued.*

Month.	Amount.	Description.
	63.57	Citizens Coal & Supply Co.—coal & freight.
	6.95	Curtis Pearson Co.—office supplies.
	37.60	Daily Tel. Ptg. Co.—postals, bills, etc.
	22.62	Garloch Packing Co.—pump packing.
	12.17	Office expense.
	77.00	C. A. Mitchell Coal Co.—coal.
	7.00	Payroll—inventory.
	75.00	" inspection.
	241.59	" pumping.
	44.10	" rate case.
	39.42	Sundry office expense.
	27.32	Standard Fuel & Supply Co.—coal.
	38.07	" Oil Co.—gasoline & oil.
	10.07	State of W. Virginia—Workmen's Compensation Fund.
	8.18	Superior Supply Co.—valve key & Wrench.
	35.20	H. O. Wiles, work on map.
	2,400.00	W. McCarthy—salary for year.
	1,800.00	A. L. Rhoads " " "
	500.00	Glenn Woodyard " Jan.-Oct. incl.
1079	$ 100.00	B. Anderson—salary Nov.-Dec.
	$17,792.16	
	4,800.00	Philadelphia Office—salaries charged.
	400.00	" " rent.
	$22,992.16	Total.

Jan.	2.69	Citizens Coal & Supply Co.—sand & cement.
	86.76	Longacre & Ewing fire insurance.
	9.20	Gamon Meter Co.—repair parts.
	9.12	Hersey Mfg. Co. " "
	76.00	National Meter Co. " "
	154.89	Payroll—pipe line maintenance.
	63.53	" meter "
	4.48	" Ada Station "
	15.75	" Gravity Spring maintenance.
	17.50	" New Spring. "
	1.97	Pittsburg Meter Co.—repair parts.
	11.82	Sundry material & supplies.
	2.88	Superior Supply Co.—bolts & packing for pipe line repair.
Feb.	73.10	Buffalo Meter Co.—repair parts.
	3.38	Citizens Coal & Supply Co.—sand & cement.
	109.20	Payroll—pipe line maintenance.
	8.93	" Ada Station "
	112.45	" meter "
	15.75	" Gravity Springs "
	8.43	Sundry material for maintenance.
March.	1.00	Baker Stone Co.—stone.
	36.04	Buffalo Meter Co.—repair parts.
	1.25	W. H. Harry—supplies for Ada repair.
	48.00	National Meter Co.—repair parts.
	160.14	Payroll—pipe line maintenance.
	87.94	" meter "
	2.24	" Ada Station "
	1.06	Pittsburg Meter Co.—repair parts.
1080	80.06	Longacre & Ewing—insurance.

1915—Plant Account.—*Continued.*

1915—Maintenance.—*Continued.*

Month.	Amount.	Description.
	13.41	Sundry material & supplies for maintenance.
April.	13.11	Buffalo Meter Co.—repair parts.
	3.01	Snow Pump Co.—repair parts.
	1.25	W. H. Harry—belt & polis- for auto.
	124.17	National Meter Co.—repair parts.
	147.74	Payroll—pipe line maintenance.
	94.89	" meter "
	2.78	" Ada Station "
	24.50	" Gravity Springs "
	.75	Pittsburgh Meter Co.—repair parts.
	17.20	Sundry maintenance & repairs.
	.85	Superior Supply Co.—pipe for meter repair.
	2.25	" " " —repair to Ada pump.
	9.85	" " " —push brooms & sheet packing pipe line.
May.	4.47	Bluefield Hardware Co.—pipe fittings for meter repair.
	6.25	Champion Refining Co.—paint for office.
	113.40	Payroll—pipe line maintenance.
	94.15	" meter "
	11.20	" Ada Station "
	34.13	" Gravity Springs "
	102.50	Leavitt Machine Co.—valve reseating outfit.
	2.84	Sundry material for maintenance.
	3.75	Superior Supply Co.—sheet packing for tanks.
	2.16	" " " —supplies for pipe line repair.
June.	25.88	Bluefield Hardware Co.—pump valves, leather etc.

	1.04	" " " fitting for meter repair.
	6.25	Champion Refining Co.—magnesia oxide for office.
	1.20	East End Pharmacy—glycerine.
	9.85	W. H. Harry—Sundry repair supplies.
	159.03	Payroll—pipe line maintenance.
	12.19	" Ada Station "
	29.08	" Beaver Pond Station maintenance.
	82.65	" Meter maintenance.
	21.00	" Gravity Springs maintenance.
	15.13	Sundry maintenance charges.
	3.07	Sterling Hardware Co.—paint for office building.
	11.78	H. R. Worthington—repairs for Beaver Pond pump.
	3.58	Superior Supply Co.—galv. pipe for meter repair.
	6.50	" " " —roofing for tanks.
July.	3.64	Appalachian Garage—auto repair.
	.35	Bluefield Hardware Co.—auto express.
1081	$9.00	Snow Pump Co.—valve facings.
	3.70	Georgia Lumber Co.—flooring for Ada Station.
	2.35	" " " —lumber for pipe line repair.
	6.30	C. A. Greaver—auto repairs.
	1.65	W. H. Harry—sundry repair supplies.
	156.80	Payroll—pipe line maintenance.
	64.58	" meter "
	30.42	" Ada Station "
	102 47	" Gravity Springs maintenance.
	31.50	" New Springs "
	5.25	Standard Fuel & Supply Co.—sand.
	10 60	Sterling Hardware Co.—paint, etc. for springs.
	24.45	" " " —paint, lead, etc. for Ada pump.

1915—Plant Account.—*Continued.*

1915—Maintenance.—*Continued.*

Month.	Amount.	Description.
	8.77	Superior Supply Co.—bolts, rods, etc. for pump repair.
	13.40	" " " steel bottom for auto truck.
Aug.	3.00	Bluefield Motor Co.—auto spring repair.
	13.27	Buffalo Meter Co.—repair parts.
	46.40	Longacre & Ewing—fire insurance.
	9.15	Gamon Meter Co.—fire insurance.
	2.24	Georgia Lumber Co. lumber & sewer pipe.
	16.54	W. H. Harry—sundry repair supplies.
	10.35	Neptune Meter Co.—repair parts.
	103.08	Payroll—pipe line maintenance.
	66.11	" meter "
	105.13	" service "
	33.07	" gravity springs maintenance.
	14.66	Sundry maintenance expense.
	2.35	Superior Supply Co.—sundry maintenance supplies.
	5.00	" " " —steel door for spring House.
Sept.	1.40	Baker Stone Co.—stone for pipe line.
	56.55	Bluefield Motor Co.—repairs to auto.
	4.25	Georgia Lumber Co.—sand & cement for pipe line.
	2.75	W. H. Harry—sundry material.
	241.34	Payroll—pipe line maintenance.
	19.45	" meter "
	6.94	" Ada Station "
	24.16	" service. "
	10.50	" gravity springs "

	8.75	" new springs "
	28.33	Sundry material, supply & freights.
	19.80	Superior Supply Co.—lead, bolts, & galv. pipe.
	20.78	" " " —gage locks, gaskets & packing.
	4.48	" " " —boiler repair & sheet packing.
	5.56	Thomson Meter Co.—repair parts.
Oct.	16.62	Bluefield Motor Co.—auto repairs.
	11.00	Bluefield Hardware Co.—galv. pipe & fittings.
1082	$22.49	J. L. Crockett—auto drive chains.
	115.14	B. F. Goodrich Co.—auto tires.
	168.68	Payroll—pipe line maintenance.
	29.92	" meter "
	23.43	" service "
	21.00	" springs "
	24.11	Sundry maintenance expense.
	.98	Superior Supply Co.—fittings for meter repair.
	1.50	M. G. Whitlow—tools for pipe line repair.
Nov.	2.50	The Auto Shop—auto repair.
	21.20	Bluefield Motor Co.—auto repair.
	.78	Bluefield Hardware Co.—galv. pipe for meter repair.
	7.71	" " " —galv. pipe & fittings pipe line repair.
	6.06	Georgia Lumber Co.—sand & cement, pipe line repair.
	5.00	W. H. Harry—sundry materials.
	122.09	Payroll—pipe line maintenance.
	6.87	" service "
	11.60	" meter "
	13.12	" gravity springs maintenance.
	15.75	" new springs "
	15.84	Sundry material, freight, etc.
	1.50	Superior Supply Co.—melting lead.

1915—Plant Account.—*Continued.*

1915—Maintenance.—*Continued.*

Month.	Amount.	Description.
Dec.	8.60	Baker Stone Co.—cement & stone—pipe line rep.
	1.20	Bluefield Motor Co.—auto repair.
	3.62	Bluefield Hardware Co.—chains for auto.
	$15.00	Burgess Electric Co.—dry batteries & wire.
	12.76	J. L. Crockett—auto repair.
	6.62	Georgia Lumber Co.—sand & cement for pipe line repair.
	4.00	W. H. Harry—sundry repair supplies.
	15.50	Int. Seal & Knot Prot. Co.—seals & tags.
	106.61	Payroll—pipe line maintenance.
	23.76	" meter maintenance.
	27.65	" service "
	22.75	" springs "
	2.19	Sundry maintenance expense.
	$4,700.10—**Total.**	

1083 Résumé of Plant Account, Income and Operation for 1915.

Cost of Plant and Property incurred prior to 1915...	$399,436.98
" " " " " " during year...	16,266.82
Total Cost of Plant and Property incurred at end of Year.....	$415,703.80
Income from Service during year.....	$42,894.87
Expenditure for Operation during Year.. $22,992.16	
" " Maintenance " " .. 4,700.10	
Total Expenditure for Operation and Maintenance during Year	27,692.26
Net Return Applicable to Depreciation, Bond Interest and Dividends.....	$15,202.61

1083½ *Balance Sheets.*

1084 Following are copies of the balance sheets of the Bluefield Water Works & Improvement Company shown for each year throughout the life of the Company, as taken from the minute book. The amount of capital invested in the water works property as shown by these balance sheets, does not, in many instances, check the aggregate of the detailed expenditures as shown by the following annual plant account statements, due to the fact that certain expenditures regarded by the Company as operating charges have herein been regarded as a plant betterment, and therefore, have been charged to plant account.

1085 *Balance Sheets of the Bluefield Water Works & Improvement Company from the Years* 1890 *to* 1915, *Inclusive, as Taken from the "Minute Book."*

December 31, 1890.

	Dr.	Cr.
Capital Stock	.....	$252,000.00
Bills Payable	.....	26,346.15
Bills Receivable	$27,206.17	
Land at Bluefield.....	147,473.28	
Houses	24,110.74	
Water Works	27,663.87	
Cash	62,732.41	
Profit and Loss.....	.....	499.00
Improvemet Fund	.....	6,271.00
Contingent Fund	.....	6,271.00
W. A. Cather & Bro.....	1,000.00	
Norfolk & Western R. R. Co.....	1,200.68	
	$291,387.15	$291,387.15

1086 December 31, 1891.

	Dr.	Cr.
Capital Stock	.....	$252,000.00
Bills Payable	.....	11,998.07
Bills Receivable	$33,684.00	
Land	175,389.24	
Houses	51,276.16	
Water Works	38,833.39	
Cash	.....	8,694.08
Profit and Loss	.....	2,163.78
Contingent Fund	.....	6,271.00
Dividend Fund	.....	25,200.00
Norfolk & Western R. R. Co.	1,439.97	
W. A. Cather & Bro.	5,000.00	
Insurance due by 4 individuals at Radford	45.60	
Insurance due by 14 individuals at Bluefield	7.60	
Graham L. & I. Co.	41.76	
Virginia Co.	40.68	
L. C. Tabb	568.53	
	$306,326.93	$306,326.93

1087 December 31, 1892.

Capital Account	.....	$252,000.00
1st Mortgage Bond a/c	.....	75,000.00
Profit and Loss	.....	1,313.48
Contingent Fund	.....	6,271.00
Bills Receivable	$33,060.36	
Land at Bluefield	178,198.85	
Houses at Bluefield	49,214.34	
W. Works at Bluefield	65,319.88	
J. H. Dingee, President	424.62	
Cash Account	25.89	
N. & W. R. R. Co.	1,235.03	
L. C. Tabb, Land Agent	780.68	
W. A. Cather & Bro. Mtg.	5,000.00	
Jos. I. Doran, Trustee	1,227.48	
Sundry Accounts	97.35	
	$334,584.48	$334,584.48

1088 December 30, 1893.

	Dr.	Cr.
Capital Account		$252,000.00
First Mortgage Bond a/c		70,000.00
Bills Payable		19,266.66
Unmatured Interest a/c		3,461.59
Profit and Loss		439.84
J. H. Dingee, Pres.		67.06
Virginia Land Co.		8,333.34
Contingent Fund		6,271.00
Bills Receivable	$18,290.61	
Land at Bluefield	203,335.82	
Houses at Bluefield	50,625.46	
Water Works at Bluefield	67,460.70	
Cash	67.44	
Jos. I. Doran, Trustee	7,370.87	
N. & W. R. R. Co.	1,065.53	
Bluefield Iron Works	5,000.00	
Gooch & McCue	2,000.00	
Land Agent, L. C. Tabb	1,418.59	
Sundry Accounts	204.47	
	$359,839.49	$359,839.49

1089 December 31, 1894.

Capital Stock		$252,000.00
First Mortgage a/c		78,000.00
Bills Payable		18,333.33
Unmatured interest a/c		1,099.16
Profit and Loss		826.71
Contingent Fund		6,271.00
Pulaski L. & I. Co.		165.83
Bills Receivable	$18,146.11	
Land at Bluefield	208,503.00	
Houses at Bluefield	51,332.26	
W. Works at Bluefield	68,382.55	
Cash	603.28	
Jos. I. Doran, Trustee	4,696.35	
N. & W. R. R. Co.	1,691.19	
L. C. Tabb, Land Agent	3,039.31	
Sundry a/cs	301.98	
	$356,696.03	$356,696.03

1090 December 31, 1895.

	Dr.	Cr.
Capital	.....	$252,000.00
First Mortgage Bonds	.....	78,000.00
Bills Payable	.....	18,333.33
Bills Receivable	$6,760.11	
Unmatured Interest	.....	1,585.56
Land	207,425.23	
Houses	51,344.26	
Water Works	72,770.71	
Cash	1,497.10	
Jos. I. Doran, Trustee	2,183.49	
Profit and Loss	.....	1,524.57
J. H. Dingee, President	2,949.86	
Contingent Fund	.....	6,271.00
Norfolk & Western Ry. Co.	977.36	
W. A. Cather & Bro.	5,000.00	
Graham Land & Improvement Co.	286.43	
Gooch & McCue	1,500.00	
Pulaski Land & Imp. Co.	10.00	
Bluefield Telegraph Printing Co.	300.00	
Graham Water Co.	69.00	
Graham Bluefield Elec. Ry. Co.	200.00	
L. C. Tabb	4,312.99	
Mount & Jones	127.92	
	$357,714.46	$357,714.46

1091 December 31, 1896.

Capital	.....	$252,000.00
1st Mortgage Bonds	.....	78,000.00
Bills Payable	.....	6,416.67
Bills Receivable	$6,171.51	
Land at Bluefield	206,606.21	
House at Bluefield	51,438.76	
Water Works	72,924.73	
Cash	2,148.54	
Jos. I. Doran, Trustee	1,810.09	
Profit and Loss	207.89	
J. H. Dingee, President	836.14	
Virginia Land Company	.....	10,000.00
Contingent Fund	.....	6,271.00
Norfolk & Western R. R.	1,000.00	
W. A. Cather & Bro.	4,630.18	
Uncollected House Rents	595.75	
Uncollected Water Rents	2,401.05	
Graham Water Company	69.00	
Graham Bluefield Electric Ry. Co.	200.00	

	Dr.	Cr.
Graham Land & Improvement Co.	405.71	
Virginia Co.	29.51	
M. C. Merkle	57.87	
Gooch & McCue	1,500.00	
Mount & Jones	127.92	
Suspense Account	.....	473.19
	$353,160.86	$353,160.86

1092 December 31, 1897.

		Present worth.
Capital	.....	$252,000.00
First Mortgage Bonds	.....	103,000.00
Bills Payable	.....	11,266.67
Bills Receivable	$5,710.61	
Undistributed Interest	1,727.50	
Land at Bluefield.....	207,475.67	
Houses at Bluefield	51,438.76	
Water Works	74.249.38	
Cash	2,025.79	
Jos. I. Doran, Trustee.....	1,438.73	
Norfolk & Western Ry. Co.....	937.84	
W. A. Cather & Bro.....	4,491.28	
Profit and Loss.....	.....	2,677.56
J. H. Dingee, President.....	14,431.85	
Uncollected House Rents.....	427.00	
Uncollected Water Rents.....	3,084.89	
Mount & Jones.....	127.92	
Graham Water Co.....	69.00	
Graham Bluefield Electric Ry. Co....	200.00	
Norton Land & Improvement Co.....	61.60	
Graham Land & Improvement Co....	344.11	
Suspense Account	.....	797.70
Gooch & McCue.....	1,500.00	
	$369,741.93	$369,741.93

1093 December 31, 1898.

	Dr.	Cr.
Capital	.....	$252,000.00
First Mortgage Bonds	.....	103,000.00
Bills Payable	.....	433.34
Bills Receivable	$5,967.81	
Undisturbed Interest	1,554.75	
Land at Bluefield	207,577.93	
House at Bluefield	51,438.76	
Water Works	75,842.20	

	Dr.	Cr.
Cash	217.11	
Jos. I. Doran, Trustee	1,438.73	
J. H. Dingee, President	6,247.71	
Norfolk & Western Ry. Co	1,135.73	
W. A. Cather & Bro	4,400.00	
Profit and Loss		3,488.27
Uncollected House Rents	416.27	
Uncollected Water Rents	3,135.15	
Suspense Account		967.36
Mount & Jones	127.92	
Graham Water Co	69.00	
Graham-Gluefield Electric Ry. Co	200.00	
Norton Land & Improvement Co	61.60	
Virginia Co.	58.30	
	$359,888.97	$359,888.97

1094 December 31, 1899.

Capital		$252,000.00
First Mortgage Bonds		103,000.00
Bills Receivable	$6,167.80	
Undistributed Interest	1,382.00	
Land at Bluefield	206,626.23	
Houses at Bluefield	51,438.76	
Water Works	77,802.71	
Cash	1,617.02	
Jos. I. Doran, Trustee	2,047.39	
W. A. Cather & Bro	3,950.00	
Profit and Loss		4,360.93
J. H. Dingee, President	4,475.78	
Uncollected House Rents	471.27	
" Water "	3,297.16	
Suspense Account		1,142.05
Mount & Jones	127.92	
Graham Water Co	69.00	
Graham Bluefield Electric Ry. Co	200.00	
Virginia Company	.05	
Norfolk & Western Ry. Co	829.89	
	$360,502.98	$360,502.98

1095 December 31, 1900.

	Dr.	Cr.
Capital	.....	$252,000.00
First Mortgage Bonds	.....	102,000.00
Bills Receivable	$6,933.80	
Undisturbed Interest Account	1,209.25	
Land at Bluefield	208,953.84	
Houses at Bluefield	47,344.51	
Water Works at Bluefield	94,942.54	
Cash	4,816.05	
Jos. I. Doran, Trustee	2,831.96	
Profit and Loss	.....	11,868.42
Uncollected House Rents	495.96	
" Water "	4,456.99	
Suspense Account	.....	1,362 00
J. H. Dingee, President	.....	3,970.75
Sheriff Mercer County	.....	2,287.42
Norfolk & Western Railway	1,042.92	
Sundry Account	460.77	
	$373,488.59	$373,488.59

1096 December 31, 1901.

Capital	.....	$252,000.00
1st Mortgage 10 year Gold Bonds	.....	130,000.00
Accounts Payable	.....	17,640.91
Profit and Loss	.....	13,343.52
Land	$208,905.65	
Houses at Bluefield	45,794.51	
Water Works	132,695.61	
Wm. B. Campbell, Trustee	8,450.45	
Bills receivable	3,308.83	
Bills Receivable, W. B. Campbell, Trustee	1,845.00	
Accounts Receivable	10,312.91	
Plumbing Material and Supplies	134.69	
Cash	1,536.78	
	$412,984.43	$412,984.43

1097 December 31, 1902.

	Dr.	Cr.
Capital	.....	$252,000.00
First Mortgage—6%—10 yr.—Gold Bonds	.....	120,000.00
Coupons Payable Jan. 1st, 1903	.....	3,600.00
Bills and Accounts Payable	.....	16,694.77
Profit and Loss	.....	27,405.26
Land	$206,476.24	
Houses at Bluefield	40,273.15	
Water Works Bluefield	135,243.52	
Wm. B. Campbell, Trustee, Cash	11,043.62	
" " " " Notes	13,036.66	
Water Works—Tools on hand	236.05	
" " Material & Supplies on Hand	1,670.65	
Plumbing Material on hand	203.81	
Bills & Accounts Receivable	6,249.67	
Cash	5,266.66	
	$419,700.03	$419,700.03

1098 December 31, 1903.

Capital	.....	$252,000.00
Bills and Accounts Payable	.....	102,884.16
Profit and Loss	.....	55,282.65
Land at Bluefield	$206,299.30	
Houses at Bluefield	32,776.04	
Water Works at Bluefield	139,620.52	
Water Works—Meter & Installation	356.02	
Water Works—Tools on hand, etc	417.30	
Water Works—Material & Supplies on hand	1,419.88	
Water Works—Plumbing material on hand	557.13	
Water Works—Meters on hand	204.80	
Deferred Payments on Land Sales	21,454.94	
Equipment	1,145.00	
Bills and Accounts receivable	4,879.52	
Cash	1,036.36	
	$410,166.81	$410,166.81

1099 December 31, 1904.

	Dr.	Cr.
Capital	.....	$252,000.00
Bills and Accounts payable	.....	110,291.61
Profits and Loss	.....	91,858.07
Land	$225,269.41	
Houses	31,198.99	
Water Works	146,600.63	
Water Works, Meters & Installation	3,579.05	
Equipment	1,145.00	
Inventory Water Works—Material & Supplies	3,143.56	
Inventory Meters on hand	276.10	
Inventory office furniture & supplies	509.25	
Deferred payments on land sales	37,532.05	
Bills and Accounts receivable	4,095.96	
Cash	799.68	
	$454,149.68	$454,149.68

1100 December 31, 1905.

Capital	.....	$252,000.00
Water Works	$154,922.31	
Land	179,250.75	
Houses (24)	25,575.28	
Inventories, Material & Supplies, etc.	3,418.77	
Accounts Payable	.....	62,484.41
Equipment, etc.	1,145.00	
Accounts Receivable	124,083.28	
Profit and Loss	.....	177,151.96
Cash	3,140.98	
	$491,636.37	$491,636.37

1101 December 31, 1906.

Capital	.....	$252,000.00
Water Works	$158,805.79	
Land	110,164.24	
Water Works New Plant	34,669.89	
House and Lot 6, Sec. 32	1,800.00	
Inventories, Material, Supplies, Tools, etc.	3,340.96	
Inventory Furniture & Fixtures	2,622.65	
Deferred Payments on Land Sales	165,124.30	
Accounts and Loans Receivable	16,658.86	
Cash	16,048.92	
Accounts and Loans Payable	.....	29,489.99
Profit and Loss	.....	225,745.62
	$507,235.61	$507,235.61

1102 December 31, 1907.

	Dr.	Cr.
Capital	.....	$252,000.00
Water Works	$240,000.00	
Accounts Receivable	10,057.39	
" Payable	.....	5,493.11
Cash	7,435.72	
	$257,493.11	$257,493.11

December 31, 1908.

Capital	.....	252,000.00
Water Works	257,991.13	
Inventories	9,591.68	
Accounts Receivable	6,247.42	
" Payable	.....	20,636.46
Profit and Loss	.....	2,003.76
Cash	809.99	
	$274,640.22	$274,640.22

1103 December 31, 1909.

Capital	.....	$252,000.00
Water Works	$271,721.67	
Inventories	6,138.07	
Accounts Receivable	3,824.11	
" Payable	.....	21,885.52
Profit and Loss	.....	10,854.34
Cash	3,056.01	
	$284,739.86	$284,739.86

December 31, 1910.

Capital	.....	252,000.00
Water Works	$277,435.65	
Inventories	6,452.44	
Accrued Water Rents unpaid Dec. 21, 1910	644.72	
Accounts Receivable	283.54	
Accounts Payable	.....	21,699.52
Profit and Loss	.....	13,295.84
Cash	2,179.01	
	$286,995.36	$286,995.36

1104 December 31, 1911.

	Dr.	Cr.
Capital	.....	$252,000.00
Water Works	$288.191.73	
Inventories	6,182.10	
Accrued Water Rents unpaid Dec. 31, 1911	224.99	
Accounts Receivable	706.75	
Accounts Payable	.....	23,552.83
Profit and Loss	.....	28,215.68
Cash	8,462.94	
	$303,768.51	$303,768.51

December 31, 1912.

Capital	.....	$252,000.00
Water Works	$316,191.05	
Inventories	7,522.84	
Accrued Water Rents unpaid Dec. 31, 1912	497.86	
Accounts Receivable	2,041.93	
Accounts Payable	.....	51,727.22
Profit and Loss	.....	23,588.51
Cash	1,062.05	
	$327,315.73	$327,315.73

1105 December 31, 1913.

Capital	.....	$312,000.00
Water Works	$297,474.91	
Inventories	6,048.54	
Accounts Receivable	8,974.18	
Accounts Payable	.....	2,175.40
Profit and Loss	.....	739.45
Cash	2,417.22	
	$314,914.85	$314,914.85

December 31, 1914.

Capital	.....	$312,000.00
Water Works	$306,157.67	
Inventories	8,118.29	
Accounts Receivable	6,851.43	
Accounts Payable	.....	4,342.70
Profit and Loss	.....	9,950.09
Cash	5,165.40	
	$326,292.79	$326,292.79

1106 December 31, 1915.

	Dr.	Cr.
Capital	.....	$312,000.00
Water Works	$312,894.25	
Inventories	11,533.13	
Accounts Receivable	11,729.26	
Accounts Payable	.....	3,102.05
Profit and Loss	.....	22,790.12
Cash	1,735.53	
	$337,892.17	$337,892.17

1106½ APPENDIX "A."

1107 Appendix "A."

Discussion of the Uses of Past Cost in Finding Present Value.

By John W. Alvord.

The principle that it is the value now that is to be determined in rate making, has been well settled by Judicial opinion and need not be dicussed here. The Courts have, however, instructed us to consider Past Cost wherever it is possible.

It is of interest in connection with this investigation of Past Cost to determine how Past Cost is to aid us in finding Present Value.

Obiously, the first and most vital help we can get from knowing the Past Cost of a property is to give the uninitiated mind charged with the judicial inquiry, some substantial clue as to the range of value in which the final result will probably fall. If we are confronted with a plant and property that is new to us, we want to know, first of all, is it about a ten thousand dollar plant or about a ten million dollars plant. If we find the Past Cost is about half a million dollars or thereabouts we can proceed with some confidence to the more detailed methods of reasoning.

1108 Those familar, from long practical experience, with plant operation and cost have other factors which guide them in approaching a new problem, such as the maximum, minimum and average cost of similar plants, per capita of population, or per mile of distribution mains, or per unit volume of output. These are, to them, more reliable than Past Cost as a preliminary guide to the probable limits of value, but to those comparatively unfamilar with practical plant cost, Past Cost will always be a helpful reassurance that whatever the detailed evidence may disclose the final conclusion will not be so wide of a reasonable mark as to be absurd.

When it comes down to the question of what allowances will be made that will increase or diminish Past Cost so as to make it conform to Present Value, we enter a field of more exact and difficult

reasoning, which must be followed if we would be masters of the logical results of the evidence submitted in each individual case.

Aside from the local conditions in each case there are certain fundamental principles which we ought to try to grasp if we would avoid confusion of thought. These fundamental principles are sought to be presented as clearly as possible.

Obviously in any growing community there are many changes in local conditions which affect the details of a valuation of a public utility as time goes by. Prices of labor and material may increase,
land has greater value, the increasing uses and improvement
1109 of street surfaces make early located underground distribution
systems more valuable, more and more consumers are served and more revenue is collected, and sources of water supply must necessarily have more and more value if the total available supply is proportionally less with increasing populations.

These are some of the appreciations which accrue to a property after its first cost is incurred. On the other hand, in some cases at least, prices of things may lessen. New contrivances may cause existing machines to be less desirable, certain structures suitable for a village are outgrown and of little use for a considerable city; smaller supply mains must be replaced by larger supply mains in places; wear and tear takes place and the needs and requirements of the public change.

These are some of the depreciations which lessen the useful value of a property after its first cost is incurred.

In any normal plant in a growing city, both appreciations and depreciations are greatly accelerated by reason of the growth of population and its increasing needs, but the appreciations will usually greatly exceed depreciations. It is a circumstance always to be explained if reproduction cost is as low or lower than the original cost in a growing town because it is much cheaper to construct a water works plant gradually in the open country outskirts of a small town
little by little under the direction of a continually operating
1110 organization that can pick its market, weather and other
opportunities than it would be to reconstruct the same plant after the population, traffic, and pavements are in place in a prosperous city with all the rapidity that then would be necessary. Land is higher; water supply will cost more to reproduce; labor is generally higher, and municipal regulations more strict and costly to the enterprise.

It appears to be obvious and axiomatic that if the actual Past Cost is correctly known and all the appreciations and depreciations are adequately listed and properly reasoned out and valued, that

$$\text{Past Cost}\left\{\begin{matrix}\text{Plus the Appreciations}\\ \\ \text{Minus the Depreciations}\end{matrix}\right\}\text{equal}\left\{\begin{matrix}\text{Present.}\\ \text{Intrinsic.}\\ \text{Value.}\end{matrix}\right.$$

By Past Cost in the above rule is meant all the costs which have occurred in creating the plant and business whether wisely or foolishly, either through deficits, gifts, services or cash.

By appreciations and depreciations are meant anything within

or without the property that has in any way affected its value, either to increase or diminish it through its life period.

By present intrinsic value is meant the present real
1111 demonstrated worth of the property as distinguished from its market and determined on the basis of its usefulness in serving efficiently a real need of the community.

It is quite obvious that to trace out correctly all the detailed fluctuations from year to year in appreciations and depreciations of a property, especially one having a long life history is a quite impossible task, and in practical appraisal work it is found that about all we can hope to do is to compute the cost of reproduction as of today for comparison with past cost and thus determine the total change which has occurred in cost or value of the component parts of the property during its life.

The same difficulty holds with reference to the depreciations. However accurately it is possible to know the Past Cost or value of a structure, it is equally important to know its present cost or value as of today if we are to obtain a measure of the change in cost or value. Consequently, it is necessary to have the cost of reproduction as of today in this case also, as a necessary pre-requisite to correct determination of depreciation.

It will be evident from this review that if our points are well taken Past Cost is not a vitally necessary thing to know providing reproduction cost of today is fairly and properly computed, because by going directly to present reproduction cost we eliminate many
1112 of the uncertainties and difficulties of an investigation into past changes which practically are so difficult to analyze.

This is why reproduction cost as of today is so much used. It is because it eliminates much devious reasoning inseparably connected with the consideration of past cost and much difficulty with old, ambiguous or imperfect data.

But the reproduction method has some difficulties of its own, chief among which is the fact that reproduction cost new is not always intelligently and correctly reasoned out and in such cases past cost where it can be obtained is, at least, a rough, general check even if it is an obscure and remote one.

If past cost is found to be equal to reproduction cost in a growing town, it is usually quite certain that reproduction cost has been seriously underestimated unless good and sufficient reasons for low reproduction or high past cost can be shown. In a considerable number of cases where past cost is known and reproduction is agreed upon by a number of estimators, past cost, as would naturally be expected, runs from 20% to 60% less than reproduction cost as of today. The only exception to this result is in a slow growing and unprogressive city or under conditions where past cost is so recent that not much time has elapsed since the building of the plant to the date of the reproduction estimate or where there has been
1113 an unusually large amount of obsolescence.

The chief difficulty in using past cost as a rough check on reproduction cost new as of today lies in the difficulty of knowing how to allow for all the intermediate changes of value that take place

without estimating reproduction now as a base from which to measure. These intermediate changes must be reasoned out independently of reproduction in some way even if only approximately, if past cost is much of any use, and it is obvious that they cannot be very accurately determined even with the best of data in any intermediate stage between original installation and the present time.

This discussion may illustrate how past cost may perhaps be useful to some degree if it is used with reproduction cost, but it is impossible to throw any light on how to use past cost independently of present reproduction cost in determining the changes in value which have accrued.

Before proceeding it is worth while to note that it is far easier to obtain a good insight into the changes of value which have occurred through depreciation than those which have come about through appreciation.

This is because depreciations are usually visable obsolescence, disuse, and decay, while appreciations are too often intangible values, but none the less necessary to consider. The only
1114 way in which appreciations can be put on the same basis as depreciations is through fair, careful and just reproduction estimates, which will fix value now as against original cost or value.

In the Bluefield case before us we have now the past cost and two widely varying reproduction estimates.

Let us take up the depreciation side first.

Depreciations.

In the first place it is to be noted that with the data before us in this case full depreciation to date can be partly determined by the operating account, but in part must be estimated.

Several fundamental depreciation principles must be here taken for granted as obvious.

1st. That depreciation is loss of value arising from all causes.

2nd. That it is an operating account in the sense that it must be earned and disbursed from time to time as an operating maintenance charge, but separately from ordinary operating charges incurred in running the plant.

3rd. That minor month by month depreciation expenses, such as occur in wear and loss of tools and small maintenance is in no way different in principle from major year by year depreciation expenses such as are incurred in rebuilding a new station building or replacing a reservoir. The one, of course, audited in a
1115 different way from the other for the short time losses are paid for out of the operating maintenance account, while the other is replacement of obsolescence and is either paid out of the depreciation fund (if there is one) after a long series of years, or (more commonly) gets charged (erroneously) to plant account. In both these cases the expense is purely for losses of value covered by the term depreciation.

4th. The maintenance operating account, therefore, where (as in this case) it has been confined to small renewals and repairs, is a true part of the depreciation and as far as it goes shows depreciation completed and paid for.

5th. The cost of any obsolete structures replaced after a series of years, should be removed from a past cost record, if found therein, as not true capital account past cost, but operating maintenance past cost, but inasmuch as this is depreciation completed and paid for in cash, such payments should of course, be credited to depreciation in summing up the total depreciation to date.

6th. In practical plant accounting, therefore, depreciation of all kinds is met with in the following ways:

1st. By operating maintenance costs from month to month which have already been paid for in cash by the Company and in the investigation has been carefully separated from the ordinary running costs.

2nd. By replacement of obsolete structures which has also been paid for in cash by the Company, and in this case have appeared in the past cost statement as presented.

3rd. Uncompleted and unusual obsolescence for which no allowance has elsewhere been made, but which is best estimated separately from the natural life of the structure.

1116 4th. By the present worth of an amortization fund for the renewal of existing structures when they have completed their natural life for which the Company may or may not have set aside a sinking fund. This item always has to be estimated as it is never paid out until renewal is necessary.

Application to Bluefield.

With these general principles in mind we find in the case of the Bluefield Water Works & Improvement Company, the depreciation which has accrued and been covered from time to time by the month by month operating maintenance expenditure

(1) As shown by the yearly statements included herein, aggregate* $42,443 up to January 1st, 1916.

The total costs of obsolete structures that have been discarded

(2) As taken from the Company's records and shown in the annual statements herein, except for relaid pipe lines which have been estimated as shown below.

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*NOTE.—In Mr. Alvord's testimony he made a rough approximate as to what this amount might be and placed it at a much larger amount than here given. It appears that he was misled by the fact that the Company commonly termed everything in the way of operation as maintenance, where Mr. Alvord understood by that term only repairs and renewals.

Obsolete Structures.

1888.	Basin #1 Spring (Original Entry Basin)	$30.00	
	" #2 " " " "	20.00	
	Wooden Storage Tank—Bland St.—50,000 gallons	1,000.00	
1890.	Basin #3 Spring (Original Entry Basin)	15.00	
	" #4 " " " "	15.00	
	" #5 " " " "	10.00	
	" #6 " " " "	25.00	
1892.	Erie Boiler for Beaver Pond Station	683.00	
	Worthington Pump for " " "	783.50	
	Freight on Pump and Boiler incl. hauling	189.54	
	Pipe, Valve, Fitting and labor for Beaver Pond Station	369.60	
	Beaver Pond Pump House and Fencing	312.18	
1893.	Meter vault in N. & W. R. R. yard	27.76	
1895.	Pumpers cottage at Beaver Pond	325.00	
1899.	Boiler installed at " " including setting	1,451.37	
1900.	Erie Economic Boiler for Ada Station including freight	876.44	
1901.	Ada Station Building, Machinery and Piping	730.01	
1903.	100 H. P. Boiler at Ada Station	2,161.69	
			$9,025.09

Pipe Lines Taken Up—Per List of W. McCarthy.

11,261′—3″ C. I. pipe—laying at 15¢		$1,689.15	
11,261′—3″ " " @ 25¢	$2,815.25		
Age 20 Yrs.—Life 60 Yrs.			
Depreciation @ 12.5% =		351.91	
3,000′—1½″ galv. pipe laid @ 25¢		750.00	
1,800′—1¼″ " " " @ 22¢		396.00	
636′—1″ " " " @ 19¢		120.84	
3,400′—6″ C. I. pipe-laying @ 20¢		680.00	
8,063′—4″ " " " @ 16¢		1,290.08	
1,591′—3″ " " " @ 15¢		238.65	
157 T. pipe @ $26.50 =	$4,160.50		
Age 20 Yrs.—Life 75 Yrs.			
Depreciation @ 6.6%		274.59	
350′—3″ C. I. pipe laid @ 40¢ (abandoned)		140.00	
200′—4″ " " " @ 45¢ "		90.00	
600′—6″ " " " @ 62¢ "		372.00	
			$6,393.22
Total (2)			$15,418.31

1118 (3) The contingent depreciation or incomplete obsolescence not yet totally paid for is as follows (our estimate):

1901-4.	*Dam and Reservoir $\frac{2}{3}$ of $7,565.83 = ... (Taken from Company's records and shown in annual statements herein.)	$5,043.88
1908.	Laboratory Equipment in Office.....	108.16
	Heating Plant in Office.....	414.18
	Office Vault	161.60
	" Furniture and Equipment.....	386.66
1909.	Laboratory Equipment	91.60
	Equipment Wiring and Fixtures.....	22.95
	Office Furniture	86.25
1910.	" "	16.75
1911.	" "	15.00
	" Gas and Electric Equipment.....	42.28
	" Building Improvement.....	655.72
	Lumber for Beaver Pond Station.....	10.91
1912.	Office Plumbing	237.58
	" Electric Wiring and Fixtures.....	20.77
	" Building Improvement	159.07
	Total (3)	$7,473.36

(4) The present worth of an amortization depreciation fund for the replacement of existing structures at their end of usefulness, as shown by Mr. Alvord's Reproduction Report of January 1st, 1915, amounts to $43,044.00.

1119 To recapitulate them we have the total depreciations of the property up to date as follows:

1st. Year by year cash maintenance expenditure arising largely from small renewals and wear and tear (already paid for).....	$42,443.00
2nd. Obsolescence now believed to be complete and so estimated (already paid for).....	15,418.31
3rd. Obsolescence now estimated as incomplete but outside of the amortization allowance (not yet paid for)	7,473.36
4th. Present Worth of an annual sinking or amortization fund which will replace structures at the end of their useful life (not yet paid for)....	43,044.00
Total Depreciation	$108,378.67

*Given no value in Mr. Alvord's Reproduction Estimate of January 1st, 1915. Now believed to be worth $\frac{1}{3}$ of cost for impounding purposes in the future.

Analysis of These Depreciation Amounts.

(1) The year by year cash maintenance expenditure has paid for depreciation as far as it goes and is not to be deducted anywhere again.

(2) Complete obsolescence which has ben replaced and paid for is $15,418.31, and this is included in the Past Cost summary of $415,704.00. As this replacement is really an operating maintenance expense it should be deducted leaving $400,386 (without deficits) as true capital account and this depreciation having been actually paid out should be credited to the depreciation made good.

(3) Uncompleted obsolescence not yet paid for is estimated at $7,473.36. As this is value gone and there is no renewal fund available to credit against it, it should be deducted from capital account.

1120 (4) The sinking fund or amortization for the renewal of all present structures is, of course, estimated at its present worth. If a depreciation fund was in hand to offset it, it would offset, but no fund being at hand it must be deducted from capital account.

We have, therefore, a total of

	(1)	$42,443.00	Maintenance Fund
and	(2)	15,418.31	Replacements
or a total of		$57,861.31	Depreciations

which has matured and been met and paid for and with which we have nothing further to do except to note that in this case they increase the general deficits of the property up to date.

We also have

	(3)	$7,473.36	Incomplete Obsolescence
and	(4)	43,044.00	Sinking Fund for Renewal
or a total of		$50,517.36	Depreciation

which the plant is estimated to have suffered and which has not yet been provided for or paid out. Consequently, we have to deduct this from the original cost (plus deficits) when we sum the matter up finally, by adding appreciations as well as deducting depreciations.

Appreciations.

Let us turn now to the matter of the appreciations of the property.

We know, in a general way, that the water supply is more 1121 costly now, that land in and around Bluefield is higher, that labor would cost somewhat more as the city grows, that pavements, car tracks, sewers, underground pipes and other obstructions

would make the plant cost greater today than ever before to say nothing of the special high prices prevailing on account of the war. Yet we find Mr. W. E. Miller's estimate for reproducing all the plant and business today is $412,991, while the Past Cost is $548,412 with deficits computed on even as low return as 7% (Wisconsin Method) and much greater by any of the other methods or reasonable rates.

It may be noted that Deficits in the Wisconsin Method, when applied to Past Cost are comparable to Going Value in Reproduction Estimates. Mr. Miller has Going Value in his reproduction estimate, consequently, his reproduction estimate may be compared with Past Cost plus Deficits.

In other words, Mr. Miller would have us believe that a plant could be built now in a well paved, active city of 15,000 inhabitants more cheaply by $125,000 to $150,000 than has actually been the case when progressively introduced first into a village of 500 or so inhabitants, and later gradually extended in its outskirts as it grew, while at opportune times over a long period cheaply acquired land, springs, water rights, right-of-way and the like property were purchased under the best possible opportunities.

1122 Inasmuch as Mr. Miller has testified that he has not taken into account the obstacles that now exist, such as cutting through pavements, increased value of springs, etc., it is difficult to see why we can call his estimate a reproduction estimate under the circumstances, as a reproduction estimate is supposed to take things as we find them now and this really explains his lack of conformity with the actual Past Cost record. Mr. Miller's estimate, not being based on things as they are now, does not help us to determine appreciations, for the appreciation must be measured as between cost or value of things as they were when originally undertaken and the cost or value of things now.

Practically there is no other way to reason out the appreciations of a property than to make a logical reproduction estimate as of today, omitting no obstacles, and passing over no present difficulty and comparing it with the Past Cost if that can be accurately known.

For any method of reasoning out appreciation to Past Cost by considering varying influences operating year by year on the property involves us in endless difficulties and will, in the end even if possible, would produce no more valuable reasoning than is obtained by computing Reproduction Cost now and comparing it with Past Cost at once for the total change which has occured in cost or value.

1123 Comparison with Reproduction Estimate.

If we will adopt for the moment the Wisconsin Method 7% basis for illustration and endeavor to reason out appreciation on the basis of a Past Cost compared with present cost the process will be as follows:

Using Mr. Alvord's reproduction cost which whatever be its faults, has at least not been critized on the score of neglecting present obstacles to rebuilding now.

We will have:

Reproduction Cost New (Alvord) as of January 1st, 1915 (undiminished by depreciation)*.....		$583,301.00
Past Cost as found by Mr. Alvord's Investigation plus deficits on 7% return Wisconsin Method (undiminished by depreciation)*.....	$548,412.	
Less Obsolescence completed and erroneously included in capital account.....	15,418.	
True Past Cost.....		532,994.00
Final Net Total of all Appreciations to the Property.....		$50,307.00

Although this is merely illustrative we may proceed to complete the formula for value with it to show how the rule ought to work.

1124 The rule given was

Original Cost { Minus Depreciation / Plus Appreciations } equals { Present Intrinsic Value }

Original Cost (Less Obsolescence) included therein was (Wisconsin Method 7% for illustration).....	$532,994
Deduct Depreciations as determined on Page 306.....	50,517
Intermediate Total.....	$482,477
Add Appreciation as above determined Page 309.....	50,307
Total Present Intrinsic Value on 7% Return Basis	$532,784

By contrast it is well here to quote from the testimony the final figures of Mr. Alvord's report.

Reproduction Estimate.....	$583,301
Less Depreciation.....	43,044
Net Value Proposed.....	$540,246

Mr. Miller's Report:†

Estimate.....	$412,991
Less Depreciation.....	29,869
Net Value Proposed.....	$383,122

*Depreciation although excluded from Cost New and Past Cost is taken account of together with other operating expenses and income in determining past deficits.

†Note.—Mr. Miller made some corrections to this estimate amounting to several thousand dollars. These are not at hand at this writing, but they will not materially affect the illustration here given in any event.

1125 If Mr. Miller's reproduction estimates (which it is to be remembered do not meet all present obstacles and conditions) are taken on the same basis as above to determine appreciations, they will result as follows:

Original Cost as before (Wisconsin Method 7% Return..		$532,994
Deduct Depreciations:		
Miller's estimate	$29,869	
Obsolescence	7,473	
Total Depreciation		37,342
Intermediate Total		$495,652
Add Appreciations:		
Original Cost New	$532,994	
Miller's " "	412,991	
Minus Total	—120,003	—120,003
Mr. Miller's Cost or Value Now		$375,649

In other words, in Mr. Miller's estimate in addition to all the direct depreciations which are found, there is to be added a further depreciation of $120,003 as the result of the proposition that a new plant can be built and its business developed for $120,003 less than it actually cost. Perhaps, this might be so in some extreme case where the reason was evident, but whether or not this is a reasonable proposition on the face of all the testimony already submitted
1126 in this Bluefield case must be left to the Commissioners to decide.

The above illustration has been used for reasoning purposes only. It is not to be used as an argument or admission that 7% is a fair return in this case. But this fact will be noted, that no matter what past cost may be taken whether with deficits figured on Wisconsin deficit basis on 8% or 6% basis or by the cumulative investment method at different rates, the resulting value will be the same as above shown if the fixed cost of reproduction above used is continuously used in each computation. This is because the reproduction cost fixes the appreciation inversely to the greater and greater past cost, so that the diminishing appreciation balances the increasing past cost. If reproduction cost is varied, the result here reasoned out of course, will vary.

To illustrate this peculiarity convincingly, estimates have been made on all the various past cost and deficit results herein originally presented as compared both with Mr. W. E. Miller's figures and for Mr. J. W. Alvord's estimates. (See Tables on two following pages).

1127 Results of Attempting to Apply Depreciation and ~~Appreciation to Past Cost~~—Wisconsin Method.

	Miller.	Alvord.
Original Cost (6% Wisconsin Deficit Method) Less Obsolescence included therein	$456,076	$456,076
Deduct Depreciation	37,342	50,517
Intermediate Total	$418,734	$406,559
Add Appreciation	—43,085	127,225
Total Present Intrinsic Value on 6% Return Basis	$375,649	$532,784
Original Cost (7% Wisconsin Deficit Method) Less Obsolescence included therein	$532,994	$532,994
Deduct Depreciation	37,342	50,517
Intermediate Total	$495,652	$482,477
Add Appreciation	—120,003	50,307
Total Present Intrinsic Value on 7% Return Basis	$375,649	$532,784
Original Cost (7½% Wisconsin Deficit Method) Less Obsolescence included therein	$576,998	$576,998
Deduct Depreciation	37,342	50,517
Intermediate Total	$539,656	$526,481
Add Appreciation	—164,007	6,303
Total Present Intrinsic Value on 7½% Return Basis	$375,649	$532,784
Original Cost (8% Wisconsin Deficit Method) Less Obsolescence included therein	$625,132	$625,132
Deduct Depreciation	37,342	50,517
Intermediate Total	$587,790	$574,615
Add Appreciation	—212,141	—41,831
Total Present Intrinsic Value on 8% Return Basis	$375,649	$532,784

1128 Results of Attempting to Apply Depreciation and Appreciation to Past Cost—Cumulative Method.

	Miller.	Alvord.
Original Cost (6% Cumulative Investment Method) Less Obsolescence Included Therein)	$533,805	$533,805
Deduct Depreciation	37,342	50,517
Intermediate Total	$496,463	483,288
Add Appreciation	—120,814	49,496
Total Present Intrinsic Value	$375,649	$532,784
Original Cost (7% Cumulative Investment Method) Less Obsolescence included therein	$626,936	$626,936
Deduct Depreciation	37,342	50,517
Intermediate Total	$589,594	$576,419
Add Appreciation	—213,945	—43,635
Total Present Intrinsic Value	$375,649	$532,784
Original Cost (7½% Cumulative Investment Method) Less Obsolescence included therein	680,317	$680,317
Deduct Depreciation	37,342	50,517
Intermediate Total	$642,975	$629,800
Add Appreciation	—267,326	—97,016
Total Present Intrinsic Value	$375,649	$532,784
Original Cost (8% Cumulative Investment Method) Less Obsolescence included therein	$738,927	$738,927
Deduct Depreciation	37,342	50,517
Intermediate Total	$701,585	$688,410
Add Appreciation	—325,649	155,626
Total Present Intrinsic Value	$375,649	$532,784

This convincingly shows that if we are trying to find cost or value now and attempt to use past cost as a fundamentl figure we are obliged to reason in a circle back to reproduction cost without
1129 greatly changing our result from reproduction cost alone or producing in any form a close check on reproduction cost itself. Some general idea may be gained as to whether the two results confirm each other, but past cost cannot take the place of or produce any effective reasoning unless we have reproduction cost as well, while reproduction cost where intelligently and properly computed can be used without past cost as a simple and single method.

To summarize the reasoning herein presented, it is concluded:

(1) That Past Cost is of only general interest and used as a guide to present value, for unless to its amount are respectively added and deducted all the appreciations and depreciation which have affected the property up to date, it does not give us any direct information on present value.

(2) That it is exceedingly difficult, if not impossible, to determine appreciations or depreciations of a plant since it was built unless a careful reproduction cost estimate is made from which to measure the changes in cost or value.

(3) That any rough approximations of appreciation or depreciation for the purpose of reducing Past Cost to present value is only doing badly what it is possible to do well by a thorough and careful reproduction cost estimate as of today.

(4) That with a proper reproduction estimate and accurate Past Cost record, correct appreciations and depreciations can be found. As correct, at least, as the reproduction estimate and Past Cost data and no more so.

1130 (5) It will appear, therefore, from the above conclusion that any attempt to use Past Cost as fundamental data is fruitless of result without a proper reproduction estimate, but that a reproduction estimate does not in a similar way depend on Past Cost, because it fundamentally eliminates most of the past and almost all of its appreciations as well as a large part of the depreciations.

(6) That to leave reproduction cost and go back to Past Cost as basic data to determine present value is to reason in a circle which leads directly back to reproduction cost as fundamentally necessary before any reliable results are obtained.

(7) It would appear, however, that if reproduction cost is illogically made or very much too large or too small through partisanship or lack of practical experience that Past Cost may indicate that a serious discrepancy exists, which if unaccounted for by some known sufficient reason must point to improper estimates in reproduction or inaccurate record of Past Cost.

(8) Past Cost, therefore, used properly has some use in any appraisal when assigned its proper perspective, but it is not fundamentally useful unless Past Cost is very recent Past Cost, so that few changes have occurred or unless a city is stationary in growth, unprogressive in making improvements and it can be shown that little change has been made in labor and material costs in its environment and surrounding conditions.

(9) We come back, therefore, to the fact that the intrinsic value of a property is a matter of correct reasoning and not of mathematical demonstration. No one can prove that a given value is correct by mere figures, but defective reasoning should always involve its own downfall when intelligently analyzed.

1131 *Discussion of Difference in Estimates of John W. Alvord and Mr. Miller in the Cost of Reproducing the Property of the Bluefield Water Works & Improvement Company, Bluefield, West Virginia.*

July, 1916.

John W. Alvord and Chas. B. Burdick, Hydraulic and Sanitary Engineers, Hartford Building, Chicago.

1131 *Comparison of Valuations of Bluefield Water Works & Improvement Co.*

By John W. Alvord and Mr. — Miller.

Alvord's item No.	Description.	Cost of reproduction.		Net physical value.	
		Alvord.	Miller.	Alvord.	Miller.
1.	Preliminary Cost	$14,455	$1,000	$14,455	$1,000
2.	(*a*) Real Estate	17,860	41,175	17,860	36,575
	(*b*) Rights-of-Way	5,102	2,500	5,102	2,500
	(*c*) Buildings & Improvements	11,002	5,985	11,002	5,163
3.	The Gravity Springs	14,645	9,418	13,886	9,142
	Water Rights	40,000	.....	40,000	.....
4.	The Ada Springs	19,231	14,766	18,558	13,027
	Water Rights	7,683	.....	7,683	.....
5.	Jarrell Spring No. 19	0	0	0	0
6.	Beaver Pond Spring No. 23	137	131	65	97
	Water Rights	2,317	.....	2,317	.....
7.	Reservoir and Dam	0	4,000	0	0
8.	Pipe Line from Gravity Springs to City	22,467	15,598	22,072	15,442
9.	" " " Ada Springs to City	54,487	47,714	53,528	47,714
10.	" " " Beaver Pond " "	4,173	3,586	3,831	3,478
11.	The Ada Station Building	15,052	11,830	14,013	11,593
12.	Steel Stack	2,931	2,248	2,377	2,152
13.	Coal Chute	868	562	808	551
14.	Oil House	168	113	156	111
15.	The Worthington Pump	1,439	1,091	472	873

Comparison of Valuations of Bluefield Water Works & Improvement Co.—Continued.

Alvord's item No.	Description.	Cost of reproduction. Alvord.	Cost of reproduction. Miller.	Net physical value. Alvord.	Net physical value. Miller.
16.	The Snow Pump	16,645	19,062	14,781	18,300
17.	Auxiliaries	1,049	945	851	822
18.	The Boiler Plant	6,444	4,317	4,807	3,680
19.	All Piping in Station	1,639	1,212	1,329	1,018
20.	Piping in Station Yard	1,348	1,156	1,241	1,132
21.	Concrete Retaining Wall	1,295	1,068	1,217	1,068
22.	Station Yard Improvements	3,916	1,116	3,680	1,091
23.	Station Miscellaneous	1,400	1,417	946	475
24.	Beaver Pond Station Building	984	610	770	61
25.	Steel Stack and Breeching	260	186	203	19
26.	Worthington Pump	801	830	402	323
27.	Feed Water Heater	93	160	47	64
28.	Boiler Plant	2,986	2,410	1,421	302
29.	All Piping in Station	410	344	264	198
30.	Intake & Pipe Line to Pumping Sta	238	172	181	163
31.	Station Miscellaneous	22	9	14	6
32.	Cast Iron Mains—Street	43,989	43,103	43,254	42,672
33.	C. I. Specials on Street Mains	1,927	1,686	1,895	1,669
34.	Laying Cast Iron Street Mains	19,579	15,682	19,252	15,212
35.	Galvanized Iron Street Mains	7,676	5,821	5,619	3,784
1132					
36.	Laying C. I. Street Mains	7,907	4,169	5,788	2,710
37.	Extra for Unusual Excavation	10,263	5,567	10,092	5,566
38.	Steam Railroad Crossings	1,415	1,310	1,391	1,297
39.	(*a*) Street Railway Crossings over C. I. Mains	356	21	350	21
	(*b*) Street Railway Crossings over G. I. Mains	82	3	60	2
40.	(*a*) Cutting Pavement over C. I. mains	26,346	233	26,398	233
	(*b*) " " over G. I. mains	1,839		1,346	
41.	Valves on Mains	3,138	2,952	2,830	2,922
42.	Valve Boxes on Mains	546	421	492	417
43.	Fire Hydrants	435	525	392	367

44. Services—Unusual Excavation—Cutting Pavement	24,395	2,363	22,004	2,174
45. Meters in Service	14,292	13,498	10,719	11,743
46. Meter Boxes and Vaults	7,547	5,814	6,807	5,509
47. Twin Tanks	33,506	29,722	27,173	29,210
48. Bland Street Tank	6,944	6,542	2,410	6,211
49. Electric Transmission Line	653	423	621	330
50. Laboratory Equipment	250	305	250	305
51. Office Furnishings	1,100	2,099	1,100	1,994
52. Materials and Supplies	8,100	5,672	8,100	5,261
53. Engineering & Superintending	22,395	14,716	20,515	13,621
54. Administrative and Legal Costs	8,960	5,391	8,205	5,391
55. General Contingent Costs	17,920	5,886	16,415	5,448
56. Interest during Construction	16,368	18,533	15,114	17,110
57. Going Concern Value	16,328	16,302	16,328	16,302
58. Operating Capital	5,000	7,500	5,000	7,500
Totals	$583,303	$412,991	$540,259	$383,122

Cost % .78
Net % .70

1133 Discussion of the Differences of the Values Adopted by John W. Alvord & Mr. Miller.

Upon the conclusion of the estimates of the cost of reproducing the properties of the Bluefield Water Works & Improvement Company, the foregoing table was prepared showing a comparison of the cost of reproduction and net physical values, as estimated by Mr. Alvord and Mr. Miller. In the following brief analysis some attention has been given to the general differences in each item. In a general way, it may be stated that Mr. Miller's unit prices on small amounts of construction and on difficult locations are not placed as much above normal unit prices as are Mr. Alvord's.

Item No. 1. Preliminary Cost.

	Cost of reproduction.	Net physical value.
Alvord	$14,455	$14,455
Miller	1,000	1,000

Mr. Alvord's estimate of preliminary cost amounts to 3% of his reproduction estimate on item- Nos. 2 to 52 inclusive. Mr. Miller's estimate on this item amounts to approximately 3/10 of 1%
1134 of his reproduction estimate on items Nos. 2 to 52 inclusive. It would seem that this small percentage would not be ample to cover all costs preliminary to the development of a precise plan of construction, including special engineering investigations, which in this particular case must be especially skilled and thorough.

The actual cost of 20 water supply reports furnished by the office of Alvord & Burdick, average about 1% of the cost of the work outlined in the reports. It has been the experience of the same office that the cost of legal advice in connection with the organization of Companies, acquisition of franchise, and optioning real estate, is fully as high as the cost of engineering investigations and reports, thus making 2%. In the case of the above estimate of 3% by Mr. Alvord, this leaves but 1% for business investigations and negotiations, special investigations test wells, and all other costs such as are incidental to the placing of the enterprise upon a definite basis up to the point where detailed plans may be prepared and actual construction begun. It is believed that in a small plant, such as Bluefield, this amount is not at all excessive.

1135 Item No. 2 (*a*) Real Estate.

	Cost of reproduction.	Net physical value.
Alvord	$17,860	$17,860
Miller	41,175	36,575

Mr. Alvord has adopted the present worth values agreed upon by Messrs. Donohue and Easley, prominent real estate men of Bluefield, who were selected to report upon the value of the lands owned exclusive of the improvements. Mr. Miller's report does not show how he arrived at the land values. His estimate on the cost of reproduction includes the improvements on the Bailey and Ruble farms, which have been estimated by Mr. Alvord to be worth $4,010. The depreciation which he applies to this item covers his estimated value of land, which he reports as not used or useful in furnishing the service.

(*b*) Rights-of-way.

	Cost of reproduction.	Net physical value.
Alvord	$5,102	$5,102
Miller	2,500	2,500

Mr. Alvord's estimates on rights-of-way are taken at actual cost to the Company plus an allowance of $2,800 to cover construction of spring pipe lines, concrete houses, and water troughs built by the Company for former owners of the spring tracts, as consideration for permission to build and maintain springs and pipe lines.
1136 Mr. Miller's report does not show his estimates in detail.

(*c*) Buildings and Improvements.

	Cost of reproduction.	Net physical value.
Alvord	$11,002	$11,002
Miller	5,985	5,163

The principal difference in this item results from the fact that Mr. Miller included the improvements on the Bailey and Ruble farms with his land estimates. The improvements on these farms have been estimated by Mr. Alvord to be worth $4,010. Mr. Miller has estimated the cost of the new office building and garage at $4,500 and has depreciated same in the amount of 45%. Mr. Alvord has estimated the present worth of the office building at $4,500 and that of the garage separately at $800. The variation in the estimates of the less valuable improvements is of no great consequence.

Item No. 3. The Gravity Springs.

	Cost of reproduction.	Net physical value.
Alvord	$14,645	$13,886
Miller	9,418	9,142

The difference in the totals as shown above results from the difference in unit prices which are shown in the following comparison. It will be remembered that all of this work is high on the moun-

tain side in very inaccessible locations not to be reached by teams at all. The prices on the remaining units not listed in the table agree quite closely.

	Alvord.	Miller.
1137 Fence Posts—In Place.....	$.30	$.60
" Wire " "	.60 a rod.	.45 a rod.
Barb Wire—In Place.....	.124 "	.03½ "
Frame Head Houses & Concrete Basins	$50 to $105	$45 each.
Clearing Brush & Deadwood.....	$100 an acre.	$15 an acre.
Grading earth and rock.....	.50 a yd.	.75 a yd.
4" vit. pipe laid per foot.....	.25 to $2.25	.66
6" " " " " "	.35 " 2.25	.72
4" C. I. blowoff pipe laid per ft.....	.50	.40
4" vit. " " " " "	.25	.15
6" " " " " "	.30	.20

Of the above items, those which make up the larger differences are the frame head houses and concrete basins, clearing brush and deadwood, and 4" and 6" vitrified pipe in place. In the two former items the estimates of Mr. Alvord are based largely upon actual cost to the Company in doing these classes of work. Unit prices of material entering into head houses are based on quotation from local dealers. The construction of one basin where material had to be carried by hand, was observed by Mr. A. T. Luce, Mr. Alvord's assistant. Mr. Miller has taken the 4" and 6" vitrified pipe in place at a general, average price, whereas Mr. Alvord has estimated each individual line separately, with the price depending upon the rock quantities encountered in excavating the trench.

Water Rights—Gravity Springs.

	Present worth.
Alvord	$40,000
Miller	000

1138 Mr. Alvord's estimate of the present worth of the water rights in the Gravity Springs is based upon an analysis which he has made, showing that the cost of water at the Twin Tanks from the springs as a source of supply, is less than the cost from the next known, most available source. The value of the water rights in the springs is taken at the present worth of the annual savings gained by their operation through their assumed life of 40 years into the future, discontinuing the annual savings uniformly each year, until at the expiration of the life of the springs it becomes zero. This analysis is shown in detail in a separate report to the Company.

Item No. 4. The Ada Springs.

	Cost of reproduction.	Net physical value.
Alvord	$19,231	$18,558
Miller	14,766	13,027

In general the difference in the above totals is due to differences in such unit prices as have been mentioned under Item No. 3. In addition to such items, Mr. Miller allows an average price of $50.00 for concrete houses and basins, whereas Mr. Alvord's allowance varies from $75 to $175, depending upon the amount of material entering into the construction. The concrete used in connection with these houses and basins is estimated by Mr. Alvord at $20.00 per yard, which would not seem to be excessive in view of the inaccessible location of the structures, and also the small amount that goes into each of these head houses.

1139 Mr. Alvord's total estimate on Ada Spring No. 21 is $7,712, which is substantiated by the actual cost of the development of this spring. Mr. Miller's estimate on this is $4,680, his price in general being lower than Mr. Alvord's.

Water Rights—Ada Springs.

	Present worth.
Alvord	$7,683
Miller	0

The manner in which Mr. Alvord arrived at the present worth of the water rights is explained under Item No. 3.

Item No. 5. Jarrell Spring No. 19.

No allowance by either Mr. Alvord or Mr. Miller.

Item No. 6. Beaver Pond Spring.

	Cost of reproduction.	Net physical value.
Alvord	$137	$65
Miller	131	97

The estimates agree quite closely.

Water Rights.

	Present worth.
Alvord	$2,317
Miller	0

The manner in which Mr. Alvord arrived at the present worth of the water rights in this spring is explained under Item No. 3.

1140 Item No. 7. Reservoir and Dam.

	Cost of reproduction.	Net physical value.
Alvord	0	0
Miller	$4,000	0

Mr. Alvord excludes this item in his estimate whereas Mr. Miller totally depreciates the item so that the net result is the same.

Item No. 8. Pipe Line from Gravity Springs to City.

	Cost of reproduction.	Net physical value.
Alvord	$22,467	$22,072
Miller	15,598	15,442

Practically the entire difference in this item is due to the variation in prices for pipe laying. Mr. Alvord has used 35¢, 40¢ and 45¢ for 3″, 4″, and 6″ pipe respectively, while Mr. Miller has used 7½¢, 8¢, and 9¢ plus an allowance for lead and yarn which raises these prices an average of about 5¢ per foot. It would seem that an average of 13¢ per foot for laying 3″, 4″, and 5″ pipe is unusually low, when considering the fact that the excavation is made difficult by the presence of boulders and thin rock ledges not included in the rock quantities. The unusual distance from the city at which a considerable portion of this work was carried on also tends to make it more expensive, and most of the material had to be carried to the site on men's shoulders. The prices used by Mr. Alvord for
1141 laying this line are substantiated by the actual cost to the Company in doing this class of work. Mr. A. T. Luce walked over this entire line and carefully noted the rock and other difficult features. It is believed that Mr. Miller's estimate will not build the line.

Item No. 9. Pipe Line from Ada Springs to the City.

	Cost of reproduction.	Net physical value.
Alvord	$54,487	$53,528
Miller	47,714	47,714

Again the difference in the totals of this item are due almost entirely to the variation of prices for pipe laying. Mr. Miller's prices range from 7½¢ to 11¢ for from 3″ to 10″ pipe, whereas, Mr. Alvord's prices range from 20¢ to 35¢ per foot. Owing to the presence of the creek, the slope of the rock stratifications, and difficulty of haul, it is believed that this line is priced too low by Mr. Miller.

Item No. 10. Pipe Line from Beaver Pond to City.

	Cost of reproduction.	Net physical value.
Alvord	$4,173	$3,831
Miller	3,586	3,478

The chief difference in the unit prices is the laying of the 10″ pipe line which Mr. Miller has priced at 11 cents per foot and Mr. Alvord at 35¢ per foot.

1142 Item No. 11. The Ada Station Building.

	Cost of reproduction.	Net physical value.
Alvord	$15,052	$14,013
Miller	11,830	11,593

In this item Mr. Alvord's price for foundation concrete is $8.50 while that of Mr. Miller's is $7.50 on a quantity of 200 yards, which is 64 yards less than is shown by the inventory. Foundation dimensions taken from the separate testimony of various men present on the work. Owing to the soft condition along the south wall most of the form lumber was left in place. Mr. Miller's price on concrete in the walls is 50¢ less than that of Mr. Alvord, and applies to a quantity which is 16 yards less than shown by the inventory. Concrete in walls measured by Mr. A. T. Luce.

Mr. Miller's prices on 10″, 15″, and 20″ cement block walls are 23¢, 34¢ and 45¢ per square foot respectively, which prices are 6¢, 7¢ and 5¢ less than those used by Mr. Alvord. His prices also are applied on quantities which are 4 square feet more on the 10″ walls, 781 square feet less on the 15″ walls, and 660 square feet less on the 20″ walls than those shown by the inventory. Walls measured by Mr. A. T. Luce and include openings to cover additional cost of window and door trim.

Mr. Miller has priced the roof steel at 4¾¢ per pound, whereas Mr. Alvord has used 6¢. The tile roofing has been priced at
1143 $12.90 per square by Mr. Miller and at $18.00 per square by Mr. Alvord. The 8″ concrete floor on 18″ of cinders has been priced by Mr. Miller at 16¢ per sq. ft. and Mr. Alvord at 25¢ per sq. ft.

The prices on the smaller units do not differ to any great extent. Mr. Alvord's total price on the structure is approximately actual cost and is equivalent to 6¾¢ per cubic foot, which does not seem excessive on a building of this type, especially when considering its location with respect to the City of Bluefield. Mr. Miller's total figure is equivalent to 5.3¢ per cubic foot, a price that would not seem to be substantiated by actual building costs for this class of work.

Item No. 12. Steel Stack.

	Cost of reproduction.	Net physical value.
Alvord	$2,931	$2,377
Miller	2,248	2,153

Mr. Miller has not priced all the expenditures as shown in the inventory, having taken exception to 22 cu. yds. of excavation, 15 cu. yds. of mass concrete, 41 cu. yds. of concrete requiring forms, 2 tons of fire clay and 700 lbs. of cast iron in base and anchor bolts. Dimensions of foundation were taken separately from men employed on the work. The excavation which Mr. Miller assumed he priced at $1.50 per yard compared to $1.00 per yard allowed by Mr. Alvord, so that his total price on the smaller quantity is larger than that of Mr. Alvord by the amount of $60.50. He has priced
1144 mass concrete at $3.50 per cubic yard, which is $2.50 less than the figure allowed by Mr. Alvord. Mr. Miller's prices on common and circular fire brick in place are $30.00 and $31.00 respectively and Mr. Alvord's $35.00 and $40.00 respectively. Actual cost of brick only from bills is $22.50 to 23.50 per M. The steel in the stack has been priced by Mr. Alvord at 5¢ per pound and by Mr. Miller at 4½¢ per pound. The above variations in prices combined with the quantities not accepted by Mr. Miller constitute practically the entire difference in the totals of the two estimates.

Item No. 13. The Coal Chute.

	Cost of reproduction.	Net physical value.
Alvord	$868	$808
Miller	562	551

The difference here is due to Mr. Miller's price of $8.00 per yard on concrete requiring forms, whereas Mr. Alvord has estimated same at $12.00 in view of the thin walls and roof of the structure and of the somewhat unusual construction of the hopper. The woven wire reinforcing has been priced by Mr. Alvord at 50¢ per square yard, whereas Mr. Miller's estimate shows a price of 5¢ per square yard.

1145 Item No. 14. The Oil House.

	Cost of reproduction.	Net physical value.
Alvord	$168	$156
Miller	113	11

The difference in the totals of the above item results from the following differences in unit prices.

	Alvord.	Miller.
Foundation Concrete.....	$12.00	$7.00
8" Concrete Block Wall....	.20 per sq. ft.	.18 per sq. ft.
Arch Roof Concrete.....	$16.00	$8.00
Door and Frame.....	$15.00	$5.00

The prices used by Mr. Alvord are somewhat higher than ordinary prices owing to the fact that the oil house is a small structure and the unit prices must, therefore, necessarily be high.

Item No. 15. The 1½ M. G. Worthington Pump.

	Cost of reproduction.	Net physical value.
Alvord	$1,439	$472
Miller	1,091	873

The difference in the cost of reproduction estimates is due to Mr. Alvord allowing a price of $1,200 on the pump only, whereas Mr. Miller has allowed but $900. The prices on the foundation concrete agree very closely. Mr. Miller's net value is above that of Mr. Alvord's owing to his depreciation being taken at 20% 1146 whereas the depreciation taken by Mr. Alvord is 67.2%. This pump is probably not as useful or strong for its work as Mr. Miller took it to be.

Item No. 16. The 1½ M. G. Snow Pump.

	Cost of reproduction.	Net physical value.
Alvord	$16,645	$14,781
Miller	19,062	18,300

Mr. Alvord has priced this pumping engine and accessories erected complete at $15,000, which is approximately actual cost to the Company in 1906. Mr. Miller's price on this pumping engine and accessories is taken at $18,000. On the foundation quantities. Mr. Alvord has priced the rock excavation at $4.50 per yard as compared to $2.50 per yard used by Mr. Miller. Mr. Alvord has priced the concrete at $8.50 per yard and Mr. Miller at $6.00 per yard. Mr. Miller's foundation quantities are less than those of Mr. Alvord's to the extent of 26 yards of rock excavation, 7 yards of earth excavation, and 23 cubic yards of concrete. The excavation was computed from slope of the natural rock surface. The suction and discharge piping has been estimated by Mr. Alvord at $375 and by Mr. Miller at $410. Mr. Miller's report shows no details as to the units making up his estimate of $410 for this piping.

1147 Item No. 17. Auxiliaries.

	Cost of reproduction.	Net physical value.
Alvord	$1,049	$851
Miller	945	822

The estimates on the total of these units agree quite closely and no analysis as to the differences is thought to be required.

Item No. 18. The Boiler Plant.

	Cost of reproduction.	Net physical value.
Alvord	$6,444	$4,807
Miller	4,317	3,680

Mr. Alvord has priced the bare boilers at $11 per horse power or a total of $3,256, which is $56 more than the boilers actually cost in 1906. The miscellaneous piping on the boilers, settings and smoke flue he has estimated in detail, the piping totalling $92, the settings $2,592 including foundations for an additional battery of 2 boilers, and a smoke flue at $408. Mr. Miller has shown only the total price on the boilers, with settings and foundations complete, at $3,033, the piping at $107, and the smoke flue at $377, showing no details as to the unit estimates on these parts of the item.

1148 Item No. 19. All Piping in Station.

	Cost of reproduction.	Net physical value.
Alvord	$1,639	$1,329
Miller	1,212	1,018

Mr. Alvord has estimated in detail the hot water piping at $141, miscellaneous water piping at $335, steam piping at $855, and miscellaneous drain piping and vents at $298. Mr. Miller's estimate does not show his prices in detail, his total prices being as follows:—hot water piping $96, miscellaneous water piping $150, steam piping $705, and miscellaneous drain piping and vents $260.

Item No. 20. Piping in Station Yard.

	Cost of reproduction.	Net physical value.
Alvord	$1,639	$1,329
Miller	1,212	1,018

Mr. Alvord has estimated the laying of the 10″ pump suction and discharge lines at 20¢ per lin. ft. whereas Mr. Alvord has used a price of 45¢ per lin. ft. Hub and spigot specials have been priced by Mr. Miller at 3¢ per pound and by Mr. Alvord at 4¢ per pound. The laying for the pipe connections at Spring No. 22 has been priced by Mr. Miller at 15¢ per lin. ft. and by Mr. Alvord at 35¢ per lin.

ft. Although the prices vary somewhat on the remaining quantities, they are so small in amount as to make it unnecessary to analyze these differences. The prices for laying allowed by Mr. Alvord are somewhat above ordinary to take care of the relatively small installations in connection with this piping in the station yard.

Item No. 21. Concrete Retaining Wall.

	Cost of reproduction.	Net physical value.
Alvord	$1,295	$1,217
Miller	1,068	1,068

In this item Mr. Miller has priced the concrete at $7.00 a yard and Mr. Alvord at $8.00 per yard. The earth fill behind the wall has been priced by Mr. Alvord at 50¢ a yard and by Mr. Miller at 25¢ a yard.

Item No. 22. Station Yard Improvements.

	Cost of reproduction.	Net physical value.
Alvord	$3,916	$3,680
Miller	1,116	1,091

Mr. Miller's quantity on the solid rock and the side hill slope is 500 yards compared to 1,080 yards as shown by the inventory. The rock quantities shown by the inventory were carefully figured from probable natural surface of rock. His price for excavating this rock is taken at $1.50, whereas Mr. Alvord has used $3.00 which, of course, is high for ordinary rock, but is not believed to be here, as the stratifications are inclined and hard to blast. Mr. Miller has priced the earth fill on the lower side of the station site at 25¢, which would seem low in view of the fact that it was borrowed to make up the deficiency not furnished by excavation. Mr. Alvord has used a price of 75¢ on this earth fill. On 210 cu. yds. of earth and loose rock fill at the coal chute Mr. Miller has used a price of 75¢ as compared to the price of 50¢ used by Mr. Alvord. Mr. Miller's price here does not conform to his price for the earth fill behind the retaining wall, although the fill is the same.

Item No. 22. Station Miscellaneous.

	Cost of reproduction.	Net physical value.
Alvord	$1,400	$946
Miller	1,417	475

The reproduction estimates agree very closely. In arriving at the net physical value Mr. Miller has charged a depreciation of 86% as compared to 32.4% taken by Mr. Alvord.

Item No. 24. Beaver Pond Station Building.

	Cost of reproduction.	Net physical value.
Alvord	$984	$770
Miller	610	61

The rubble masonry in the piers has been estimated by Mr. Miller at $5.00 per yard and by Mr. Alvord at $10.00 per yard; this sum is adopted in view of the very small quantity of this masonry. Mr. Miller's lumber prices vary from $30.00 to $50.00, where as Mr. Alvord's prices vary from $50.00 to $55.00. The doors and windows have been estimated by Mr. Alvord at $68.00 and by Mr. Miller at $40.00. The corrugated steel has been estimated by Mr. Miller at $4.50 per square and by Mr. Alvord at 90¢ a square yard,
1151 which is equivalent to $10.00 per square.

Mr. Alvord has depreciated this structure in the amount of 21.8% of the reproduction cost and Mr. Miller has depreciated same 90%, most of which he assumes as functional depreciation. It would seem that there would be some question as to functionally depreciating a structure which serves for machinery of the type which it houses, inasmuch as it may be called into service at any time in the event of a diminished supply from the springs or due to the machinery at the Ada Station being shut down for repairs and maintenance. This consideration should be given to all items in connection with the Beaver Pond Station, mainly items Nos. 24 to 28 inclusive, all of which have been largely functionally depreciated by Mr. Miller.

Item No. 25. Steel Stack and Breeching.

	Cost of reproduction.	Net physical value.
Alvord	$260	$203
Miller	186	19

The stack is made of #10 steel and is 60′ high. The weight of 3,200 lbs., is the result of careful computation for the stack and breeching. The difference in the cost of reproduction items is largely due to the weight of steel in stack and breeching taken by Mr. Miller at 1,800 lbs., and as shown by the inventory at 3,200 lbs.
1152 On the amount which he has accepted Mr. Miller has used a price of 7¢, whereas Mr. Alvord has used a price of 6¢ on the amount shown in the inventory.

Item No. 26. The 1 M. G. Daily Worthington Pump.

	Cost of reproduction.	Net physical value.
Alvord	$801	$402
Miller	834	323

The reproduction estimates agree quite closely. In arriving at the net physical value Mr. Alvord has depreciated the pump at 50% and Mr. Miller at 60%, most of which he states to be functional.

Item No. 27. Feed Water Heater.

	Cost of reproduction.	Net physical value.
Alvord	$93	$47
Miller	160	64

Mr. Miller shows no details on this item. His depreciation has been taken at 60%, and that of Mr. Alvord's at 50%.

Item No. 28. Boiler Plant.

	Cost of reproduction.	Net physical value.
Alvord	$2,986	$1,421
Miller	2,410	302

Mr. Miller has estimated the 80 H. P. boiler at $1,100 and the 100 H. P. boiler at $1,300 including foundations and settings
1153 complete. Mr. Alvord has estimated the 80 H. P. boiler at $1,005 and the 100 H. P. boiler at $1,265 exclusive of foundations and settings, and being equivalent to $12.00 per H. P. The foundations and settings have been estimated separately by Mr. Alvord at $702. The depreciation charge by Mr. Alvord is 52.4% and that by Mr. Miller at 87.5%, a large proportion of which is assumed to be functional.

Item No. 29. All Piping in Station.

	Cost of reproduction.	Net physical value.
Alvord	$410	$264
Miller	344	198

Mr. Miller's report shows no details as to the units used in pricing this piping. Mr. Alvord has charged depreciation of 35.7% and Mr. Miller a depreciation of 42%.

Item No. 30. Intake and Pipe Line to the Pumping Station.

	Cost of reproduction.	Net physical value.
Alvord	$238	$181
Miller	172	163

The net physical values on this item agree quite closely.

Item No. 31. Station Miscellaneous.

	Cost of reproduction.	Net physical value.
Alvord	$22	$14
Miller	9	6

1154 The lubricator has been priced by Mr. Alvord at $7.50 and the revolution counter at $15.00, whereas Mr. Miller has used $5.70 and $3.25 respectively.

Item No. 32. Cast Iron Street Mains.

	Cost of reproduction.	Net physical value.
Alvord	$43,989	$43,254
Miller	43,103	42,672

The estimates on this item agree so closely that no discussion as to the differences in the unit prices is believed essential.

Item No. 33. Cast Iron Specials on Street Mains.

	Cost of reproduction.	Net physical value.
Alvord	$1,927	$1,895
Miller	1,686	1,669

The difference in the totals of this item is due to the fact that Mr Alvord has used a price of 3¢, per pound, whereas Mr. Miller has used a price of 2⅝¢ per pound. The average price of specials at the foundry for a number of years has been 2¾¢ and Mr. Alvord has allowed an extra ¼¢ to cover the cost of freight, hauling and laying of these specials.

Item No. 34. Laying Cast Iron Street Mains.

	Cost of reproduction.	Net physical value.
Alvord	$19,579	$19,252
Miller	15,682	15,212

1155 The prices for pipe laying used by Mr. Miller and Mr. Alvord are as follows:

	Alvord.	Miller.
3″	$0.15	$0.12
4″	.16	.13
6″	.20	.16
8″	.24	.19
10″	.28	.22½

The laying prices used by Mr. Alvord are substantiated by a study of the actual costs to the Company of pipe lines laid within recent years.

Item No. 35. Galvanized Iron Street Mains.

	Cost of reproduction.	Net physical value.
Alvord	$7,676	$5,619
Miller	5,821	3,784

	Alvord.	Miller.
½"	$0.04	$0.0332
¾"	.05	.0398
1"	.08	.058
1¼"	.11	.0784
1½"	.13	.0938
2"	.18	.126
2½"	.25	.20

1156 Mr. Miller has made an allowance for fittings of 5%, amounting to $277. Mr. Alvord's unit prices are based upon prices commonly prevailing previous to the outbreak of the European War. These prices are now 50% higher.

Quotation- given July 1st, 1915, at Bluefield on car load lots, are as follows:

½"	$4.44	per 100
¾"	5.56	" "
1"	8.21	" "
1¼"	11.10	" "
1½"	13.27	" "
2"	17.86	" "

Item No. 36. Laying Galvanized Iron Street Mains.

	Cost of reproduction.	Net physical value.
Alvord	$7,907	$5,788
Miller	4,169	2,710

	Alvord.	Miller.
½"	$0.10	$0.06
¾"	.10	.06
1"	.11	.06
1¼"	.11	.06
1½"	.12	.06
2"	.13	.06
2½"	.14	.06

Mr. Miller has allowed an average price of 6¢ per foot for the laying of all sizes of galvanized iron mains, while Mr. Al-
1157 vord's prices range from 10¢ to 14¢ per lin. ft. for ½" to 2½" galvanized iron pipe, which conformed to the Company's recent cost for laying galvanized pipe. Mr. A. T. Luce timed the laying of some of this pipe. The actual cost on ½" pipe laid in earth was 12¢ per foot.

Item No. 37. Extra for Unusual Excavation.

	Cost of reproduction.	Net physical value.
Alvord	$10,263	$10,092
Miller	5,567	5,566

In this item Mr. Alvord has estimated the solid rock excavation at $2.50 per yard and Mr. Miller has used $3.00 per yard. The shale excavation has been estimated by Mr. Miller at 25¢ per yard and by Mr. Alvord at $1.00 per yard which results in the main difference in the totals. Mr. Miller has estimated the wet trench at 2¢ a lin. ft. as compared to 20¢ used by Mr. Alvord. Mr. Alvord's estimate of shale excavation is based largely upon the actual cost to the Company in removing this class of material from the trench.

Item No. 38. Steam Railroad Crossings.

	Cost of reproduction.	Net physical value.
Alvord	$1,415	$1,391
Miller	1,310	1,297

The estimates on this item agree quite closely.

1158 Item No. 39. (*a*) Street Railway Crossings Over C. I. Mains.

	Cost of reproduction.	Net physical value.
Alvord	$356	$350
Miller	21	21

Mr. Alvord has priced the right angle street crossings at $12.00 and the diagonal crossings at $17.00. Mr. Miller has priced the right angle crossings at 50¢ and the diagonal crossings at 15¢ a foot or $2.30 per crossing.

(*b*) Street Railawy Crossings Over G. I. Mains.

	Cost of reproduction.	Net physical value.
Alvord	$82	$60
Miller	3	2

Mr. Alvord has priced the right angle crossings at $12.00 and the diagonal crossings at $17.00, whereas Mr. Miller has priced the right angle crossings at 25¢ each, and the diagonal crossings at $1.00 each.

Item No. 40. Cutting Pavement Over Mains.

	Cost of reproduction.	Net physical value.
Alvord	$28,685	$27,744
Miller	233	233

The difference in this item is due to the fact that Mr. Alvord's total price is based on the amount of pavement it would be necessary to disturb in reproducing the distribution system at the present time, whereas Mr. Miller has priced only such paving as was actually cut through and replaced in laying the mains originally.

1159 Item No. 41. Valves on Mains.

	Cost of reproduction.	Net physical value.
Alvord	$3,138	$2,830
Miller	2,952	2,922

The estimates agree quite closely.

Item No. 42. Valve Boxes on Mains.

	Cost of reproduction.	Net physical value.
Alvord	$546	$492
Miller	421	417

These estimates agree quite closely.

Item No. 43. Fire Hydrants.

	Cost of reproduction.	Net physical value.
Alvord	$435	$392
Miller	525	367

There is no great difference in the estimated net physical values for this item.

Item No. 44. Services, Unusual Excavation and Cutting Pavement Over Services.

	Cost of reproduction.	Net physical value.
Alvord	$24,395	$22,042
Miller	2,363	2,174

The difference in this item is due to the fact that Mr. Miller has included only the cost of furnishing and inserting the corporation cock in the mains and assumed that the consumer would be
1160 required to bear the expense of the service connection. Mr. Alvord's estimate includes the services and fittings complete; including laying from the main to the property line, also the unusual excavation in connection with the services and the cutting through pavement over service pipes, both of which have been taken proportional to street mains.

Item No. 45. Meters in Service.

	Cost of reproduction.	Net physical value.
Alvord	$14,292	$10,719
Miller	13,498	11,743

The reproduction estimates agree quite closely. Mr. Alvord's net physical value is approximately $1,000 below that of Mr. Miller's owing to his having depreciated the meters to the extent of 25%, whereas Mr. Miller depreciated them but 13%.

Item No. 46. Meter Boxes in Vaults.

	Cost of reproduction.	Net physical value.
Alvord	$7,547	$6,807
Miller	5,814	5,509

The general difference in this item is due to the price of meter boxes being taken at $3.00 by Mr. Miller and $4.50 by Mr. Alvord. The price of $4.50 is based upon the average cost of these boxes to the Company during the past few years.

1161 Item No. 47. Twin Tanks.

	Cost of reproduction.	Net physical value.
Alvord	$33,506	$27,173
Miller	29,722	29,210

The general difference in the reproduction estimates is due to Mr. Alvord using a price of 5¢ for steel erected as compared to 4½¢ per pound used by Mr. Miller. The net physical value allowed by Mr. Alvord is $2,000 below that of Mr. Miller's owing to Mr. Alvord having charged a depreciation of 18.9% as compared to 2.9% charged by Mr. Miller.

Item No. 48. Bland Street Tank.

	Cost of reproduction.	Net physical value.
Alvord	$6,944	$2,410
Miller	6,542	6,211

As in the preceding item Mr. Alvord's price for steel is ½¢ higher than that of Mr. Miller. In this item Mr. Alvord has charged a depreciation of 65% and Mr. Miller has charged a depreciation of 8%.

Item No. 49. Electric Transmission Line.

	Cost of reproduction.	Net physical value.
Alvord	$653	$621
Miller	423	330

The price allowed by Mr. Miller for material in place practically corresponds with the prices allowed by Mr. Alvord for the
1162 material only. In addition Mr. Alvord has allowed an item of labor of erecting line amounting to $200. Mr. Miller has estimated an age of 8 years and a life of 25 years, making the depreciation 22%. Mr. Alvord's depreciation is based on an age of 2 years and a life of 25 years, amounting to 4.9%.

Item No. 50. Laboratory Equipment.

Item No. 51. Office Furnishings.

Item No. 52. Auxiliaries and Tools.

	Cost of reproduction.	Net physical value.
Alvord	$250	$250
	1,100	1,100
	8,100	8,100
	$9,450	$9,450
Miller	$305	$305
	2,099	1,994
	5,273	5,261
	$7,677	$7,560

Item No. 53. Engineering and Superintending.

	Cost of reproduction.	Net physical value.
Alvord	$22,395	$20,515
Miller	14,716	13,621

Both estimates are taken at 5% of items Nos. 3 to 51 inclusive, Mr. Miller's amount being below that of Mr. Alvord's in the ratio of the differences of their individual estimates.

1163 Item No. 54. Administrative and Legal Costs.

	Cost of reproduction.	Net physical value.
Alvord	$8,960	$8,205
Miller	5,391	5,391

Mr. Alvord's estimate of this item is taken at 2% of items Nos. 3 to 52 inclusive and Mr. Miller's estimate is taken at 1½% of his estimates on Items Nos. 1 to 53 inclusive. Mr. Miller has charged no depreciation against the amount which he allows for administrative and legal costs.

Item No. 55. General Contingent Cost.

	Cost of reproduction.	Net physical value.
Alvord	$17,902	$16,415
Miller	5,886	5,448

Mr. Alvord has taken the general contingent costs at 4% of items Nos. 3 to 52 inclusive, whereas Mr. Miller has taken 2% of his estimates on items Nos. 3 to 51 inclusive.

Item No. 56. Interest during Construction.

	Cost of reproduction.	Net physical value.
Alvord	$16,368	$15,114
Miller	18,533	17,110

The amount of Mr. Alvord's estimate upon interest during construction amounts to 6% on ½ of his estimates on items Nos.
1164 1 to 55 inclusive, assuming that the average amount on which interest is chargeable for one full year is one-half of the total investment in the plant. The amount of interest during construction estimated by Mr. Miller is 5% of his estimates on items Nos. 1 to 55 inclusive.

Item No. 57. Going Concern Value.

	Cost of reproduction.	Net physical value.
Alvord	$16,328	$16,328
Miller	16,302	16,302

These estimates agree very closely.

Item No. 58. Operating Capital.

	Cost of reproduction.	Net physical value.
Alvord	$5,000	$5,000
Miller	7,500	7,500

Mr. Alvord's estimate of operating capital is taken at 25% of the annual cost of operation, assuming that collections are made every three months.

1165 *Report to the Bluefield Water Works & Improvement Company on Division of Investment Between Fire Protection and Domestic Supply.*

By John W. Alvord, Consulting Engineer, Chicago.

John W. Alvord and Chas. B. Burdick,

Hydraulic and Sanitary Engineers,

Hartford Building,

Chicago.

Sanders & Crockett.

1165*a* Mr. William McCarthy,
Supt. Bluefield Water Works & Improvement Company,
Bluefield, W. Va.

DEAR SIRS:

At your request I have made a division of the property of the Bluefield Water Works & Improvement Company as between the investments made for public and private services in order to proportion the total income from operation equitably between public and private services.

The Theory of Apportioning Fire Protection Cost Equitably.

In most water works properties a large part of the investment in the plant is made solely for the purpose of providing adequate fire protection; another part is necessary both for fire protection and

domestic service and a third part is unnecessary for fire protection and is of value only in meeting domestic requirements. In making a division of a water works property for the purposes of ascertaining the relative proportions of the total income which should be
1166 borne by public and private services, it is necessary to give consideration to each part of the property and its adaptability or the necessity for its use for each of the above purposes.

The most commonly accepted method of proportioning the costs of public and private services consists of three separate computations:

1st. The valuation of the plant as it stands;

2nd. The modification of the existing plant to perform the functions of a theoretical plant designed and sufficient in capacity for fire service only;

and

3rd. The modification of the existing plant so that it will perform the functions of a theoretical plant capable of furnishing domestic service only.

The sum of the estimates under the second and third studies will give a value much greater than the value of the existing plant, and the value of the existing plant should then be subdivided between public and private services in proportion to the theoretical values found necessary in each case.

The estimated costs of three plants have been computed; first, that of the present plant as it stands; second, of a plant being designed for fire service only, eliminating such structures in the existing plant as the galvanized iron mains, Bland Street tank, Beaver Pond Station, etc., which are obviously unnecessary
1167 for a plant which is to operate at infrequent intervals and furnish fire protection alone; and third, a plant designed for supplying domestic service only, eliminating such structures as hydrants, the Twin Tanks and the electric valves, which are obviously not required for domestic service alone.

The following table shows the summarized cost of the various parts entering into the fire and domestic service plants:

Estimated Cost of Separate Fire and Domestic Plants.

Item.	Fire only.	Domestic only.
Preliminary Cost	$9,462	$12,450
Real Estate	22,902	33,964
Gravity Springs & Pipe Line	0	75,958
Ada Springs & Pipe Line	78,769	78,769
Beaver Pond Springs & Pipe Line	0	6,223
Ada Sta. Bldg., Stack, Coal Chute, Oil House	17,354	17,354
" " Equipment	23,481	23,481
" " Improvements and Miscellaneous	5,843	5,843
Beaver Pond Station and Stack	0	973
" " Equipment	0	1,870
" " Improvements and Miscellaneous	0	459
C. I. Mains. Specials and Laying	85,750	64,401
" Valves	4,360	3,322
" Hydrants	2,350	0
G. I. Mains	0	11,407
Unusual Difficulties, Paving and Crossings	38,231	39,637
Services and Meters	0	39,530
Twin Tanks	27,173	0
Bland Street Tank	0	2,410
Electric Valves	0	0
General Equipment	9,200	9,450
Overhead Charges	34,700	45,655
Interest During Construction	9,300	12,250
Totals	$368,875	$485,406

1168 It will be noticed that the total estimated cost of a plant for fire protection only is $368,875, and for domestic service only, is $485,406. The estimated present value of the existing plant is $540,000.

Assuming that the present plant is able to furnish adequate fire protection, the respective parts of the plant values chargeable to fire and domestic service are $\frac{\$368,875}{\$368,875 + \$485,406} = 43.2\%$, and $\frac{\$485,406}{\$368,875 + \$485,406} = 56.8\%$ The property of the Bluefield Water Works & Improvement Company has been estimated to have a present value of $540,000 of which 43.2% or $233,000 is chargeable to fire protection and $307,000 to domestic or private service.

Division of Operating Costs

In addition to the study of the division of plant value between fire and domestic services, it is necessary to inquire in a similar

manner into the operating expenses and divide the combined operating expenses of the present plant between those chargeable to fire service and domestic service.

The total income of a plant must be sufficient to cover operating charges, and interest and depreciation on the investment. In this computation the operating expenses are taken as indicated from the operating statistics for the past five years, tabulated in the Appendix to our "Report on the Value of the Properties of the Bluefield Water Works & improvement Company." The rate of Interest on
1169 the investment has been taken at 7% and an allowance for annual depreciation at 1%, making a total for fixed charges of 8%.

There has been made a detailed estimate of the cost of operation of a plant operating for domestic service only and another plant operating for fire service only. This estimate is given below in tabular form.

Pumping:

Operation	Domestic plant.	Fire plant.
Labor	$3,000	$1,750
Coal, Oil and Chemicals	7,000	300
Miscellaneous	100	25
Maintenance—Labor	500	100
" —Material	250	50
Distribution System:		
Maintenance—Labor	500	250
" —Material	250	125
Miscellaneous	100	50
General Expense:		
Salaries	4,400	3,000
Office Supplies	400	75
Insurance	400	300
Taxes	2,450	1,800
Legal Expense	250	100
Other General Expense	400	200
Total Operating Expense	$20,000	$8,125

In addition to the operating expenses for the two plants, the fixed charges on the investment must be considered. The fire service should bear the fixed charges on that part of the plant chargeable to fire service, shown above to be 43.2% and in a similar way
1170 the domestic service should pay the fixed charges on approximately 56.8% of the plant cost.

The total cost of operation for each plant is shown below:

Item.	Fire plant.	Domestic plant.
Cost of Operation	$8,125	$20,000
Interest on Investment @ 7%	25,820	33,978
Depreciation @ 1%	3,689	4,854
	$37,634	$58,832

Therefore, if the Bluefield plant is able to furnish adequate fire protection it should receive revenue from hydrant rental in the proportion of $\frac{\$37,634}{\$37,634 + \$58,832}$ or 39% of its total income. The plant is, however, not capable in all of its parts of furnishing adequate protection against the most serious conflagration that may reasonably be expected and a further study is, therefore, necessary.

Value of Partial Fire Protection.

The previously outlined method is not strictly applicable to a plant which is unable in all its parts to furnish adequate fire protection. It will not be disputed that even partial fire protection is of considerable value. It is but very rarely that the full amount of water at the high pressures demanded by the term "adequate fire protection" is needed, and a water plant may be able to supply all of the water required for the extinguishment of fires for many years with less than half of the "adequate fire protection" 1171 capacity. The problem is, therefore, how to best express the value of partial fire protection in terms of adequate fire protection.

In a plant capable of furnishing partial protection a large part of the investment necessary for complete protection has usually been made. In the Bluefield plant the Twin Tanks when full will alone supply all the water needed at satisfactory pressure to fight a maximum fire of 9½ hours duration; the distribution system has less capacity than required to deliver this maximum rate of demand from the tanks to the fire with the low friction loss necessary to give satisfactory pressure, but has sufficient capacity to furnish a large percentage of the maximum demand rate at satisfactory pressure. It is found by computations that an added investment of about $40,000, made in reinforcing the distribution system would enable the plant to furnish adequate fire protection along all of the present cast iron mains.

It is believed that the correct method of measuring the value of this partial fire protection is to first ascertain the proportionate part of the total operating cost which is chargeable to fire protection on the assumption that adequate protection is afforded, and then deduct from the amount thus obtained the fixed charges on the added in-

vestment (in this case 8% of $40,000 or $3,200) in the present plant necessary to make it adequate in capacity.

The ratio of the net cost of operating the plant for fire protection (corrected for deficient capacity as above computed) to the
1172 sum of the costs of operating the fire and domestic plants will be the proportionate part of the total income which should be derived from public hydrant rentals. This ratio is $\frac{\$37,634 - \$3,200}{\$37,634 + \$58,832} = 35.6\%$, which it is believed represents that part of the income of the Bluefield Water Works & Improvement Company which should be derived from public hydrant rentals.

This proportion corresponds with the recommendations made in a number of cases by the Wisconsin Rate Commission who have given considerable attention to the equitable apportionment of fire protection cost. In three cities, Ashland, Janesville and Beloit, which have about the same population as Bluefield, the Commission found that fire service should be charged with 54½%, 54% and 48% respectively of the total investment in the plants.

At Ashland the recommended annual fire service charge amounted to 4½% of the plant value, at Janesville 6.0%, and at Beloit 6.9%. On the basis computed herein that the fire service pay 35.6% of the total income, the annual hydrant rental would be about $22,500 (based on 8% fixed charges plus $20,000 operating costs), which is only 4.17% of the estimated present value of the property.

Respectfully submitted,

JOHN W. ALVORD.

April 21st, 1916,
Chicago, Illinois.

1172a *Rules, Regulations, and Water Rates of the Bluefield Water Works & Improvement Co.*

Bluefield, West Va.

Effective April 1, 1908.

1172*b* Rules, Regulations, and Water Rates of the Bluefield Water Works & Improvement Co.

Bluefield, West Va.

Effective April 1, 1908.

1173 Rules and Regulations.

For the Government and Protection of the Water Supply of the Bluefield Water Works & Improvement Co. Of Bluefield, W. Va.

Conditions under Which Water Company Furnish Water. Property Owners to Look After the Safety of Their Pipes and Fixtures.

The requirements made and the inspection referred to in these rules are primarily for and in the interest of the Water Company and are merely part of the conditions upon which the Water Company is willing to furnish water, and while it is also to the interest of all property owners and water takers that these rules should be strictly enforced, that each user of water may get the benefit of a full and adequate supply, and the protection afforded by a full and adequate supply, yet such users and owners must understand that the Water Company assumes no responsibility for a failure on the part of its agents to compel their observance, and consequently that users of water and owners of property themselves must be the guardians of the safety and sufficiency of their own pipes and fixtures.

1174 Steam Boilers. House Boilers to be Supplied with Vacuum Valves.

Steam boilers taking a supply of water directly from the service main, depending upon the hydraulic or hydrostatic pressure in the pipe system of the waterworks for supplying such boilers under working pressure will do so at the risk of parties making such attachments, as the Water Company will not be responsible for any accidents or damages to which such devices are frequently subject. House boilers for domestic use, should in all *classes*, be provided with vacuum valves, to prevent collapsing when water is shut off from the distributing pipes; and for accidents or damages resulting from the imperfect action of any such valves, the Water Company will, in no such case, be responsible.

Rules and Regulations.

Application for the Use of Water. Owner Required to Sign Permit.

Rule 1. All applications for the use of water must be made at the office of the Superintendent and in the form prescribed, stating

fully and clearly the various uses to which the water is to be applied. The owner of the property is, in all cases, required to sign the permit, subject to the rules of the Company.

1175 Pipes and Fixtures Subject to Approval of Superintendent.

Rule 3. The strength of the pipes used; their protection against freezing; the kind of faucets and other fixtures, and the general arrangements of the work in reference to its security and safety are to be subject to the approval of the Superintendent or his assistants.

Past Dues to be Paid Before Water is Turned On.

Rule 4. Before the water is turned on from service pipes, all past dues must be paid, and all dues for the current quarter must be agreed upon and paid for the quarter.

Water Pipes and Fixtures to be Cared for and Protected from Frost. Charges Made for Turning Off and On at Curb Stop.

Rule 5. Persons taking water must keep their own water pipes and all fixtures connected therewith in good repair and protected from frost at their own expense. They must provide a stop and waste cock, to be properly located inside the building, and have the pipes so arranged that the water can be drawn from them wherever and whenever there is danger of freezing. In cases where there is no stop located on the premises, a charge to cover cost will be made for closing and opening when necessary, at the curb stone.

1176 No Allowances or Rebates Allowed.

Rule No. 7. No person shall be entitled to damages, nor have any portion of the payment refunded for any stoppage of supply occasioned by accident to any portion of the works, nor for stoppage for purposes of addition or repairs, nor for non-use occasioned by absence; and the Company shall have the right to shut off water to make repairs or additions.

Property Owners to be Held Responsible for Water Rents. Conditions under Which Collections from Tenants Will Be Made. Water Will Be Shut Off for Non-payment. When Tenants Are Responsible for Water Rents.

Rule 8. When water shall have been supplied to more than one party through a single tap, the bill for the whole supply furnished through such tap will be made to the owner of the estate, who shall agree to be responsible therefor. The Company will look direct to the owner of the property for the entire rent for the water furnished said premises, aggregating the bills of all the consumers and presenting them to the owner for payment. The collection from tenants will be attempted only where hydrants and pipes are so arranged

and supplied with stop keys as to give the Superintendent or other agent of the Company perfect and absolute control, at all times, over the supply to each individual water taker by turning on or
1177 shutting off the water. In case of non-payment, the water will be shut off, notwithstanding one or more parties have paid the proportion due from him or them. Water will be furnished property owners only under regular permit. Water furnished for temporary use, such as to contractors, street sprinkling carts, etc., and to tenants when such tenants are wholly responsible for the payment of water rents, will be furnished only under special permits. (See Rules 22 and 23.)

Each Property to be Supplied by Separate Tap.

The Company will in the future, refuse to issue permits for water to be furnished to more than one house through the same tap. A separate tap and stop must be used for each property.

Neighboring Premises Not to be Supplied. Prohibited Uses of Water.

Rule 9. No hydrant, hose or hose bib attachment shall be placed in any yard, or area of any premises so situated as to be accessible to persons living in or occupying neighboring premises, unless the owner of the premises first named becomes responsible for and pays the water rent for all persons using the water therefrom. No pipe or hose on private premises shall be used to flush sewers or privy vaults, or fill cisterns.

Fixtures Shall Be Charged for if Allowed to Remain Connected to Plumbing.

Rule 10. In all occupied premises, every private fountain, water closet, set basin, bath tub, sink or other fixtures, whether used or not, will be deemed and held as used, and will be charged for so long as such fountain, water closet, set basin, bath tub, sink
1178 or other fixtures shall remain connected with the water pipes.

All Pilfering or Unauthorized Uses of Water Prohibited.

Rule 11. Consumers must protect their premises and fixtures so that no pilfering of water by neighbors can occur, and no excuse will be taken for failure to do so. Whether the supply comes through a meter or not, no water shall be furnished to other premises, either directly or indirectly. Any violation of this rule renders the offering party liable to have the supply shut off without notice.

Water May Be Cut Off at Corporation Stop. Charges Made for Cutting Off and On.

In cases where the water is turned off for non-payment of water rent or other cause, or when, in the opinion of the Superintendent, the turning off of the water at the curb stop is not sufficient protection against the further use of water, he may cause the water to be turned off at the corporation stop; in which event a charge to cover labor will be made before turning it on again.

Private Fire Supply Pipes—Water Not to be Used Through Them for Other Purposes.

Rule 12. Persons who have provided themselves with private fire supply for fire purposes will not be allowed to use water through such fixtures for any other purposes except for the extinguishment of fire. Any person violating this provision will be liable to have the supply shut off.

Hose Allowed Used Only On Metered Services.

Rule 13. Hose must not be attached to hydrants, spigots or
1179 fixtures, unless the supply is furnished through a meter.

The Uses of Water Must Not Be Concealed.

Rule 14. There shall be no concealment of the purposes for which water is used.

Hose Allowed Only On Metered Services.

Rule 15. No person shall use a hand hose for sprinkling streets, washing sidewalks, streets or gutters, or thawing snow or ice, or for any purpose whatever, unless the supply is furnished through a meter.

Forbidden Uses of Water.

Rule 16. No person shall use leaking hose attachments, broken caps or boxes, nor convert hose nozzles into jets for amusements, or suffer the same to run when not in actual use. Parties who have hose connections on the sidewalk must not leave their hose connected therewith so that other parties can use the same, and in no case must hose hydrant be left attached to such street hydrant.

Unnecessary Waste of Water Prohibited.

Rule 17. There shall be no unnecessary waste of water. Any person violating this rule shall be liable to have his supply of water shut off, whether same is furnished through a meter or otherwise.

Unnecessary Waste of Water for Street Sprinkling Prohibited.

Rule 18. In taking water for street sprinkling purposes, no leakage or waste of water, either from street sprinkling hose or sprinkling cart, will be tolerated.

1180 Street Sprinkling to be Confined to One-half the Width of Street.

Rule 19. All instructions received from the Superintendent or his agents relatives to the sprinkling of streets shall be fully complied with, and any violation of the rules shall be deemed sufficient reason for refusing further permits. When using a street sprinkler, each water taker must confine himself to the front of his premises, including one-half the width of the street.

Right to Enter Premises.

Rule 20. The Superintendent, his agents or assistants may enter the premises of any water taker that is or has been supplied with water at all reasonable hours of the day, to-wit: between 8 o'clock A. M. and 6 o'clock P. M., to examine the pipes and fixtures, the quantity of water used and the manner of its use. Each and every denial of this right will render the offending party liable to have the water shut off without notice.

Applications for Special or Temporary Use of Water. Special Uses of Water to be Paid for in Advance. Deposit to Cover Consumption to be Made. No Water Allowed Used under Special Permit, Except As Indicated in the Application.

Rule 21. A special application must be made for connection for special or temporary use, and may be supplied by estimate in lump sum or by meter as hereinafter provided for, at the option of the Company, and the Company reserves the right to charge for the meter if one is used. Water supplied under special permit shall be paid for in advance. If a meter is used, a cash deposit sufficient to cover an estimate of consumption must be made, and renewed from time to time if water is consumed in larger amounts or beyond time contemplated. Failure to comply with this regulation will render the *application* liable to have the water shut off without notice, and all payments will be forfeited. The deposit made for special service by meter will be credited to the applicant, and at the termination of service any difference due must be paid within five days, or if an excess has been deposited the Company will refund the amount, unless the service has been terminated through a fault of the applicant. No consumer under special permit will be allowed to use the water for purposes other than indicated in the application, and if found doing so without a permit the supply will be stopped.

1181

Rules Regarding Payment of Bills for Water. Special Permit. Water Used for the Extinguishment of Fire Not to be Charged for. Consumers to Apply for and Pay Bills Without Notice.

Rule 22. All water rents or flat rate are due and must be paid quarterly in advance. Where water is furnished through meters and at meter rates, all water rents are due and must be paid by the 1st of the month immediately following the month in which the service was rendered. If water rents are unpaid for a term of thirty days on flat rate, or for a term of ten days on metered services, after the same are due, the water will positively be cut off and
1182 interest charges together with the actual cost of cutting the supply off and turning it on again will be made and collected before the water is again turned on. Exception to the above is made for water furnished under special permit, which is to be paid as provided in Rule 21 and for water used for the extinguishment of fire. Notifications from the Company that bills are payable at any stated period as above shall be deemed equivalent to a rendering of bill at such dates, and consumers must apply for and pay same at the Company's office accordingly without further notice. (See Rules regarding payment of bills.)

Authority to Shut Off.

Rule 23. Any violation or failure to comply with any of the rules of the Company, neglect or refusal to comply with the directions of the Superintendent or his assistants, or non-payment of bills, shall constitute authority to the Company to shut off the water; and when so shut off, it shall not be turned on until all dues and expenses are paid.

Elevators.

Rule 24. No freight or passenger elevator shall be operated by the water from the water mains, except in cases where the water to move the elevator is supplied with a tank with proper valves and
1183 connections approved by the Company, or unless the supply is furnished through a meter.

Meter to Stop Waste. Two or More Houses Not to be Supplied with Water Through Same Meter. Water Company to have Control of Meter. Meter Boxes. Location of Meter.

Rule 25. Should the water Company through its officers or employes, have reason to believe that unnecessary extraordinary or willful waste of water, or that water is being used or wasted through any service connected to the pipe or mains of the said Water Company contrary to these rules and regulations or for any other reason, the Superintendent may require said service to be furnished with water through a meter, to be charged for at meter rates, and should any owner of property, furnished with water from the mains or pipes of

said Water Company, believe that by economy in the use of water he can save money by so doing may have and demand water supplied to his premises through a meter and at meter rates. Water will not be furnished to two or more houses through the same meter under any circumstances or conditions, whether the two or more houses are contiguous or otherwise or whether owned by the same or separate parties. In all cases the meter must be subject to the control of the Water Company, and if the service is discontinued, it may be removed by the Company. The location of the meter, the protection required, etc., will be determined by the company. In all cases a meter box will be provided outside, and in all in-
1184 stances the position of the meter must be at a point easily accessible to meter readings.

Meters to be Furnished by Company.

All meters used in connection with the service to any property or water taker shall be furnished and placed by the Water Company. The Water Company will decline to use or take readings from any private meter placed by any party on a water service, either directly or indirectly, whether the supply furnished passes through such meter in whole or part, nor will the Water Company be responsible for any division of water through such meter between two or more parties that may receive their supply through said private meter.

Connection to be Made so that All Water Will Pass Through Meter. Meters Tampered with, or Failing to Register.

Consumers must make all connections for supply at points beyond the location of the meter, so that all water used will pass through the same. If at any time a meter shall be found to have been tampered with, or for any reason has failed to register since the last previous takings of readings, the water consumption for such period may be estimated by the Company from previous bills for water through the same or similar connections.

Transfer of Permit.

Rule 26. Any person selling his or her property is required to have the permit transferred on the books of the Company, or remain liable for the water rent. Transfers made without charge.

1185 Right of Company to Restrict the Use of Water. Collections from Tenants.

Rule 27. The Company reserves the right to restrict the use of water at any time. When collecting water rent from tenants, this Company will act as agent for the lessors and not as agents for the Company.

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Location of Hydrants.

Hydrants will not be allowed on any public street, lane or alley.

Waste of Water. Private Fire Hydrants and Stand Pipes to be Separate from Regular Supply. Permits for Fire Protection. Size of Pipe for Private Fire Protection. Water May Be Cut Off without Notice. Water Used for the Extinguishment of Fire Not Charged for. No contract to be Made to Furnish Water for the Extinguishment of Fires. Water Company Not Liable for Lack of Water at Time of Fire. Water Rents Not a Charge for Protection from Fire.

Rule 28. In order to guard against the extraordinary waste of water which always occurs when pipes larger than what are necessary for the regular supply are used, it is provided that all services designed for fire protection and the pipes connecting thereto, shall be laid separately from the regular supply lines. Permits for fire protection services shall be issued only with the consent of the President of the Water Company, in each case, and he may refuse his consent in any case, and when such consent is granted he shall decide what the largest size of pipe to be allowed in such case shall be. At any time through its officers or employes, and when they may consider it expedient to do so, water may be cut off of the Water Company's water mains, without previous notice, on this account no supply of water for fire protection service shall be promised on behalf of the Water Company, by its officers or employes, and no water which may be used from the mains or pipes of the
1186 Water Company, or from private or public fire protection devices or from any other pipe or fixtures for the extinguishment of fire shall be charged for. The Water Company hereby peremptorily refuses to enter into any contract, express or implied, to furnish water for the extinguishment of fires or to be obligated in any way to have on a supply of water at any fire plug or consumer's hydrant or at any other outlet at the time of any fire, or to be liable for such supply not being on at any time, and no office, agent or employe of the Water Company shall at any time have authority to bind the Water Company by his acts or sufferance to any such contract, obligation or liability. The water rent charged by the Water Company on residences or business houses or on either public or private hydrants is in no sense a charge for protection from fire, or for the use of water in the event of fire.

No Water to be Taken from Fire Protection Services Except for the Extinguishment of Fire.

Rule 29. No person shall take any water from a fire protection service or the pipes connection therewith for any use, except for the extinguishment of fire.

Fixtures to be Removed from Waste Pipes.

Rule 30. Unless water closets, baths and laundry tubs, have both water and waste pipes cut off and removed from such fixture, and unless urinals are removed from the Water Company's water
1187 supply, water rent will be charged on such water closets, baths, laundry tubs and urinals, as such fixtures will be deemed connected and used.

Correction of or Refunding Over-charges. All Consumers Bound By.

Rule 31. While the Water Company through its proper officers has authority to correct any error which may exist in a charge for water against any person or persons or to refund any over-charge, every person, firms or corporation applying for or using water from the mains or pipes of said Water Company, shall by so applying or using, have agreed to take the water on the only terms that it will be furnished, viz: that such person, firm or corporation shall agree to these rules and regulations and consent to be subject and conform to and be governed by the same and all reasonable amendments th-reto, and to pay the established rates for water at fixture or flat rates if the service rendered be at fixture or flat rates, and at meter rates, if the service furnished be on a meter, except that water used for the extinguishment of fires will not be charged for.

1187*a* Bluefield Water Works and Improvement Co.

Application and Contract of Consumer.

Tap No. .....
Map Sec. .....
Block .....
Lot .....

Meter { No. ..... Size ..... Make .....

To the Bluefield Water Works and Improvement Co.

—— —, 190-.

GENTLEMEN:

I, —— —— the undersigned, owner of the property on the — side of —— Street, between —— Street, in —— hereby request you to supply said premises with water, by meter rate, by fixture rate, for which I agree to pay your established rates. If this application is for water at fixture rates, I agree not to use any other fixtures than those specified in the following schedule:

* * * * * * *

1187*b* The amount (if any) necessary to make up the minimum rate is to be charged upon the bills rendered on the first day of —— in each year. Rate to be — cents per 1,000 gallons and

the minimum rate to be $— per year. Meter Rent $— per year.

The undersigned owner- of the premises above described do hereby make application for permission to make the connections, alterations or addition as above described, and to attach same to the pipes of the Bluefield Water Works and Improvement Company and to introduce and use water upon said premises. In consideration of the said permit being granted, the undersigned, —— —— hereby bind — heirs or assigns, to pay all water bills at the Company's office as they become due, whether by — or — tenants, from time to time, according to the rules, regulations and rates as they are now made, a copy of which may be seen in the office of the Company, or may be hereafter amended, which said rules, regulations and rates, the said —— —— covenant and agree — to strictly abide by. And the said —— —— in consideration of the premises, futher covenant, and agree that - shall continue liable for all water bills accruing as aforesaid so long as — remain owner of the said premises, and afterwards until — shall give notice in writing to the manager of said Company with name and address of the person or persons or corporation to whom the said premises, or any part thereof, may be transferred, and the said —— —— further covenant — and agree — that all amounts becoming due as aforesaid shall be, and constitute a lien and charge upon the entire premises aforesaid, and shall continue, notwithstanding said premises may hereafter be alienated or transferred and shall be recoverable by all remedies provided by law. —— —— hereby covenant — and agree — to notify any person, persons or corporation — to whom — shall transfer said premises of such lien, if any exist at the time of such transfer.

1188

In signing this contract — assume — all risk and liability for any accident, and do — hereby release the Water Company from all claims of damage of any kind or description.

This conract is for a period of — months — days, but will be continued from year to year, unless cancelled by either party, on the given or written notice in advance; provided, however, that the undersigned has paid the amount due the Water Company at the time of giving said notice.

Witness the following signature — and seal —.

—— ——. [SEAL.]
—— ——. [SEAL.]

Plumber: —— ——.

NOTE.—Before signing the above all persons are requested to carefully read same.

1189 Application for the Use of Water. Special Uses of Water.

All applications for the use of water must be made at the office of the Superintendent and in the form prescribed above. The owner of the property will, in all cases, be required to sign the permit. Exception to the above rule will only be made where water is to be furnished, contractors, builders, circuses, etc., wherein the

owner of the property where the water is used is in no way responsible for the water used, in which case a special permit must be signed by the contractor or party desiring the use of water.

Application for the Use of Water under Special Permit.

Bluefield Water Works and Improvement Company.

Bluefield, W. Va., —— —, ——.

No. —.

To the Bluefield Water Works and Improvement —:

Special permit for water. Connections for special, building or temporary use.

The undersigned —— —— hereby makes application for a tap and the use of water for the specific purposes herein located and described: ——.

1190 In consideration of said permit being granted, the undersigned —— —— hereby binds — heirs or assigns to pay all water bills at the Company's office strictly in advance, according to the rules, regulations and rates as they are now made or may hereafter be amended, which said rules, regulations and rates the said —— —— covenants and agrees strictly to abide by. And the said —— —— in consideration of the premises further covenants and agrees that all amounts becoming due as aforesaid, shall be, and shall constitute a lien and charge upon the property owned by the said —— —— and shall so continue, and shall be recoverable by all remedies provided by law. And the said —— —— in consideration of the premises further covenants and agrees to pay for the use of water at the following rates:

For water furnished through a meter, per 1,000 gallons..... 25

For water not furnished through a meter the following rates for building purposes are agreed to and are a part of this contract:

Laying brick per 1,000	.15
Masonry per cubic yard	.06
Plastering per 100 yards	.30
Artificial or cement pavement, per square yard	.05

The said —— —— also agrees to deposit with the Bluefield Water Works & Improvement Co. the sum of — to cover the cost of meter, etc., which amount will, upon the completion of the work, be credited to — unless the services *has* been terminated through the fault of the undersigned.

This Company reserves the right to determine whether the water for building or other purposes shall be furnished through a meter or otherwise.

The minimum charge for water per month under this contract shall be $—.

—— ——.

1191 *Private Fire Hydrants Contract.*

The following form of contract covering private fire hydrants, plugs or stand pipes will be used.

This agreement made this the — day of ——, 19— by and between the Bluefield Water Works & Improvement Company, of Bluefield, West Virginia, a corporation, its successors and assigns, party of the first party and —— ——, West Virginia, —— ——, a party of the second part.

Witnesseth that in consideration of one ($1.00) dollar in hand paid by the party of the second part to the party of the first part, receipt of which is hereby acknowledged and other valuable considerations, the parties hereto contract as follows:

First. The party of the first part grants unto the party of the second part the right and privelege to connect a — pipe with a tap to the street main of the party of the first part, at the curb line at the — side of —— Street in the City of Bluefield, W. Va., opposite their — building where now located in the City of Bluefield, and to take water therefrom at time of fire only through a — line of pipe. In consideration for which the party of the second part agrees as follows:

Second. It is understood and agreed between the parties hereto that all connections and appurtenances shall be put in by the party of the first part as far as the curb line, and it is further understood and agreed that the party of the second part shall pay the party of the first part the cost of materials used in making the said tap and the laying of the pipe from the street main, and the materials necessary to take the water to the curb line of the party of the second part.

It is further understood and agreed that the party of the second part shall keep all connections and appurtenances in good order and same shall be maintained by the party of the second part, and that the valves controlling the said opening shall be kept constantly closed and sealed and not opened except in times of fire at their store building or adjacent buildings, and that no water shall
1192 be used through this tap except for the extinguishment of fire.

And in the event of opening the said valves at such time and for such purposes, the party of the second part, will notify the party of the first part, so that said valves may be again inspected and sealed.

Third. It is also further understood and agreed that the party of the first part will not be held responsible in case of failure to get water through the said tap or openings in the event of fire.

Fourth. This contract does not contemplate any other special service or condition.

Fifth. It is further understood and agreed that in all other respects this contract is subject to the Rules and Regulations of the party of the first part, which are now or may hereafter be adopted, and the installation of all connections are to be made in a manner to be approved by the Superintendent of the party of the first part. The service pipes are to be at all times open to the inspection of the Superintendent or Inspector of the party of the first part.

Sixth. The party of the second part is to use such precautions as may be necessary to avoid bursting of pipes during cold weather.

Seventh. This contract is for a period of — month and — days from the date hereof, but will be continued from year to year, unless cancelled by either party, on the given or written notice in advance.

In witness whereof the parties hereto have set their hands and seals this the — day of ——, 19—.

BLUEFIELD WATER WORKS AND IMPT. CO. [SEAL.]

—— ——,
President.

—— ——. [SEAL.]

1193 *Schedule of Rates.*

Dwelling Houses, per Year, Occupied by One Family.

One year for one hydrant or spigot	9.00
One bath tub	3.00
Shower bath, not connected with bath tub	3.00
Water closet, each bowl	3.00
Urinal	1.50
Set basin, each	1.50
One set of wash tubs, not exceeding three tubs	5.00
Each additional set of wash tubs	2.00
Each family having separate fixtures will be charged the same as if living in a separate house. If using the same fixtures, each additional family will be charged	9.00

Water rents at the above rates are to be paid strictly in advance. See Rule 22.

Boarding and Lodging Houses per Year.

For six rooms or less	12.00
Each additional room without spigot	1.00
One room or hall with spigot and washstand	3.00
Each additional room with washstand and spigot	1.50
Water closet, each bowl	7.50
Urinal	3.00
Sink, slop over one	5.00

Water rents at the above rates to be paid strictly in advance. See Rule 22.

Hotels, per Year.

Each room including those occupied by the proprietor, his family and employes	1.00
Water closet, each bowl	7.50
Urinal	3.00
Set basin, each	3.00
Billiard saloon	10.00

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Bowling Alley	10.00
Bath tub	5.00
Laundry	15.00
Bakery	15.00
Bar Room	25.00
Hose	10.00

Water rents at the above rates are to be paid strictly in advance. See Rule 22.

Fountains.

The following fixtures will be allowed and furnished with water only on metered services.

Sprinkler, or moveable fountain for lawn, or garden, centre fountain, fountain in yard or garden, garden hydrants, street, window and pave washers.

Livery Stable per Year.

Fifteen stalls or less, each stall, not exceeding fifteen (15)	2.00
Each stall exceeding 15 and not exceeding 25	1.00
Twenty-five to 40 stalls, each stall, exceeding 25 and not exceeding 40	.75
Over 40 stalls, each stall exceeding 40	.50
Hose for livery stable 15 stalls or less, each stable	10.00
Hose for livery stable 15 to 25 stalls, each stable	15.00
Hose for livery stable 25 to 40 stalls, each stable	20.00
Hose for livery stable over 40 stalls, each stable	25.00
Hacks, each	3.00
Hearse	3.00

Water rents at the above rates are to be paid strictly in advance. See Rule 22.

Printing Offices per Year.

Printing Office	10.00

Water rents at the above rates are to be paid strictly in advance. See Rule 22.

1195 Restaurant and Eating Houses per Year.

Restaurant or eating house, without bar attached	12.00
Restaurant or eating house, with bar attached	35.00

Water rents at the above rates are to be paid strictly in advance.

Stores per Year.

Stores where no liquors are sold	9.00
Stores with license to sell spirit or malt liquors	25.00

Water rents at the above rates are to be paid strictly in advance. See Rule 22.

Building Purposes.

Laying brick per 1,000	.15
Masonry, per cubic yard	.06
Water used in the construction of artificial or cement pavements, paid in advance, per sq. yd	.05
Plastering, per 100 square yards	.30

Or on metered services at 25 cents per 1,000 gallons.

Water for building purposes will be furnished only under special permit. See rules.

Sundries.

Post Office	9.00
Banks	12.00
Butcher Shop	25.00
Bar Room	25.00
Barber Shop	10.00
Billiard Saloon	10.00
Bowling Alley	10.00
Bakery	15.00
Buggy	1.50
Bath tub, public	5.00
Boiler with engine attached, for each horse power	3.00
For each horse-power of boiler, above capacity of engine	1.00

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Boiler when used without engine, each horse power	2.00
Horse, mule or cow, not belonging to livery stable	2.00
Laundry	15.00
Machine Shop	15.00
Offices with spigot	5.00
Two or more offices using the same spigot, each	2.50
Photograph Gallery	12.00
Theater or public hall	10.00
Work shop	9.00

Water closet, each bowl, public	7.50
Urinal	3.00
Water closet, private, each bowl	3.00
Wash basin or box not otherwise provided for	3.00
Soda fountain, six months	10.00
Tumbler washer	15.00
Tumbler washer, continuous, six months	30.00

Water rents at the above rates are to be paid strictly in advance. See Rule 22.

Meter Rates.

All bills for water shall be computed each month, upon the following rates and basis: 25 cents per 1,000 gallons.

All water that passes through the meter will be charged for, whether the water is used or wasted.

A minimum charge per month will be made should the amount of water as registered by the meter and charged for as above, not amount to that sum.

The minimum rate shall start from the date of the contract.

Special Rates.

Any private consumer, desiring a lower rate can obtain same by signing a special contract at any one of the following rates:

20c. per 1,000 gallons	$6.50	monthly	minimum	rate.
17½c. per 1,000 gallons	16.50	"	"	"
15c. per 1,000 gallons	50.00	"	"	"
12½c. per 1,000 gallons	125.00	"	"	"

1197 Minimum Charges.

For water supplied through a one-half inch meter, per month	.75
For water supplied through a three-fourth inch meter per month	4.75
For water supplied through a one-inch meter, per month	6.00
For water supplied through a one and one-half inch meter, per month	15.00
For water supplied through a two-inch meter, per month	35.00
For water supplied through a three-inch meter, per month	85.00
For water supplied through a four-inch meter, per month	210.00

At least the minimum consumption noted above will be charged notwithstanding a less amount may have been registered by the meter. The fact that the minimum consumption charged has not been used in any month shall not entitle water taker to any credit for such deficiency in case the minimum is exceeded in the next or any subsequent month.

Meters will be read near the last of each month and bills presented the first day of the month immediately following month in which

the service was rendered, and if not paid within 30 days after the date of same the water will positively be cut off, and interest charged together with the actual cost of cutting the supply off and turning it on again will be made and collected before the water is again turned on.

All Rules and Regulations and parts of Rules and Regulations inconsistent with the provisions of these Rules and Regulations and coming within the perview thereof, are hereby cancelled.

Approved by the Board of Directors, March 25, 1908.

J. H. DINGEE,
President.
J. M. WIRGMAN,
Secretary.

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1204½ Joseph M. Sanders.

Report on Valuation of Property of Bluefield Water Works & Improvement Company, Bluefield, West Virginia.

1205 Explanatory Statement.

This report presents what is believed to be the value of the property of the Bluefield (W. Va.) Water Works and Improvement Company, as it existed January 1, 1915, upon which equitable rates for the service then being furnished should afford a fair net return.

There is also presented, as appendix A, a separation or apportionment of the total value between the two primary classes of service, Public and Private, as a basis of dividing the taxes, depreciation and net return between these two classes.

The derivation of the value is based upon the inventory or schedule of property prepared by Alvord & Burdick, as of the above date, supplemented by personal inspection and investigation on the part of the writer, and upon the proposition that the property is worth what it would cost to reproduce it now, under ordinarily skillful and intelligent management, at prices for materials and labor such as have prevailed during the recent past, and under such physical conditions as existed at the time the property (each part) was actually constructed, minus the depreciation which has accrued to it in one way or another.

It would probably be contended by some that the hypothetical construction of the property in the immediate future, assuming it were not now in existence, must, for the sake of logic, be based upon such physical conditions as now exist, regardless of how different these may be from those that were originally encountered. Probably the greatest, and in many cases perhaps the only, change in physical conditions affecting the cost of construction of city water

supply plants is in the condition of the streets, many of these
1206 having been paved subsequent to the construction of the pipe lines.

As to the question of whether present or original physical conditions should be taken as the basis of valuation of such properties as that under consideration, attention is called to the report to the American Society of Civil Engineers, in January, 1914, by the special committee on "valuation for the purpose of rate-making," in which the committee advocated the assumption of original physical conditions.

As to the question of whether or not that portion of the cost of reproduction of pipe lines due to the (hypothetical) cutting through and replacement of pavements which were laid subsequent to the pipe lines is a proper element of value here, attention is called to the fact that the U. S. Supreme Court has held that such feature of the reproduction cost is not fairly entitled to consideration in determining the value upon which rates and earnings should provide a fair net return.

(Des Moines Gas Co. vs. City of Des Moines, Pub. Utility Reports, D-577.)

The construction of such a property, whether it be done by a private or the municipal corporation, invariably involves more than the direct expenses for labor and materials entering into the physical structures. There are various costs for the design, management and financing of the enterprise during the period of construction, and uncompensated expense of operation for a time after completion while the business is being developed to the point of yielding the amount of all proper elements of cost of the service. A fare and equitable valuation must take into account and make due allowance for all proper items of cost whether they result in some physical feature of the plant or not.

1207 The inventory prepared by Alvord & Burdick was found to be substantially correct so far as could be ascertained. A few minor errors have, however, been noted and corrected. These are generally in calculation of quantities of work and materials, based upon measurements or dimensions of the structures. There are certain quantities of work and materials listed, the correctness of which could not be either proven or disproven, e. g., the amounts of grading done and the amounts of rock hammered to small pieces in connection with the improvement of the springs. The lack of definite records of certain kinds appears to have necessitated an approximation of such quantities, probably on the basis of the recollection of those in charge of the work, consequently there is some uncertainty as to the correctness of these quantities. The application to them of what are believed to be proper unit prices may result in a total cost materially in error due to both (quantities and unit prices) being either somewhat too large or both somewhat too small. In all such cases the best evidence of reproductive cost would be the record of actual cost, if such costs can be segregated from the ac-

counts, modified in accordance with such changes as have taken place in prices of materials and labor entering into the work.

Basis of Prices.

Prices of most materials or commodities vary from time to time, and in some cases rather widely. To some extent this is true of the wages of labor. Actual costs are the result of purchase at a particular time at prices then prevailing. They may be above or below a normal rate, hence actual costs may, for this as well as other
1208 reasons, not be altogether acceptable in determining a fair and equitable value for rate-making purposes.

Cast iron pipe forms a large item in the cost of practically every water works system. This is true of the Bluefield system. A diagram, figure 1, herewith, shows the fluctuation of prices of this commodity from 1884 to 1915, inclusive, in carloads at Chicago, as quoted in the trade journals. From this diagram it will be obvious that the price of pipe at a particular date is not the measure of that stable value, for rate-making purposes, of the pipe in a water works system. The same diagram also shows the progressive five-year and ten-year average values throughout, and the one-year averages to and including the year 1909.

Until very recently a five year average price of pipe and other materials has been used by the engineering staff of the Railroad Commission of Wisconsin in its valuation work, as have numerous others engaged in work of this kind, but it has now come to be realized that even five year averages do not give sufficiently stable values for rate-making purposes. Such work is now being done by that staff on the ten year average price basis for the more important commodities.

Two other diagrams, figures 2 and 3, are also presented herewith, showing, respectively, the varying quotations on steel plates and pig lead during several years. The quotations shown are those in effect on or about the first of each month at designated places.

Similar studies have been made of the variations in prices of other construction materials at different times and places, but those mentioned above are believed to suffice as illustrations.

1209 Land Values.

Many of the tracts of land owned by the company were purchased solely because of the water which was to be had upon them and nowhere else within practical limits. The former owners from whom these lands were purchased doubtless realized in varying degrees of accuracy the potential value of these limited sources of water supply and made the sales accordingly. The values of these tracts upon which the water supply is developed must obviously be based upon other considerations than the values of similar areas of adjacent land yielding no water. Roughly speaking, the demand for water is in proportion to the population and the value of a limited supply will increase with the population (though perhaps not

in direct proportion) up to the point at which people will be compelled to provide water privately in other ways.

The original costs of the spring tracts seem to bear no relation whatever to their yield of water, nor is it surprising that this be true. Their intrinsic values, however, surely bear a relation to their yields of water. A spring which goes dry sooner, and yields less water while flowing than others can scarcely be considered as valuable as one which never goes dry and always has a larger flow. Here, then, is an illustration of the fact that the cost (or cost of reproduction) and intrinsic value of a thing may be radically different. Cost of reproduction is, however, the adopted basis of the estimates and no attempt will therefore be made to show relative values of the different springs on the basis of their yields.

The growth of the city is found to have brought about very large increases in the values of land in certain portions of the city, during the last ten or twelve years, while in other portions the increases have ranged down to nothing, especially where the land is
1210 least adapted to building purposes.

Growth of cities quite generally brings with it an increase in the values of surrounding land, the increases depending on the proximity of the land to the city and its adaptation to particular uses.

The figures placed upon the company's lands in the following estimates are based upon consideration of the amounts paid for them, the intervals which have elapsed and the general considerations outlined above. No more accurate information seemed to be obtainable as to what the present acquirement of these several parcels would cost. It might possibly be true that the purchase of the company's spring tracts at this time instead of at the time they were acquired would involve no more than the or-ginal cost, but this can hardly be considered as probable.

Certain tracts of the company's lands are regarded as having no value so far as the water service is concerned and are worth only what can be realized from their sale. Being useless in connection with the water service they are given no value in the cost of reproduction less depreciation estimate upon which proper rates should be based. If included at all it would seem that their value must be considered as potential working capital which will become available for actual use when these tracts are sold. Such tracts are, however, entered in the reproductive-cost-new estimate at their reported original cost and then depreciated to no present value.

Depreciation.

Substantially all parts of a water supply plant suffer shinkages in value in either or both of two ways: (*a*) natural decay, i. e.,
1211 corrosion, rot or wear and tear; (*b*) changes in conditions of service which render them obsolete, inadequate or too inefficient. It appears to be quite generally admitted that both kinds of depreciation are to be taken into account in cases of this kind, i. e., for determining equitable rates. Both kinds are taken into account

in the estimates herein presented. In each instance the estimated total useful life taken as the basis of depreciation is stated.

During the remainder of the useful life of each item of the property the existing value thereof must be amortized out of the earnings. Reasonable rates must therefore yield not only the ordinary expenses of operation, including taxes, and a fair return upon that amount of invested capital represented by the value of the property, but must also provide for the annual shinkage in the property value, or depreciation.

Depreciation is assumed to be met and cared for by an amortization fund built up during the (estimated) life of the property, partly by the transfer to it from operating revenues of certain sums annually and partly by the compound interest earnings of the fund. It is assumed that such a fund, at any time, will offset, and be a measure of, the shinkage in value or depreciation of the property (or feature of a property) for which the fund is or is assumed to be created.

Finally.

Upon the basis of the inventory as corrected by the writer in certain minor particulars, personal inspection of substantially all visible parts of the property and investigation of local conditions generally, the fair value of the property of the Bluefield Water Works
1212 & Improvement Company upon which a fair and reasonable net return should be provided in the rates is found to be as itemized in subsequent pages hereof, aggregating $412,991 as cost of reproduction new and $383,122 as cost of reproduction new less depreciation, inclusive of going value and operating capital.

Item No.	Description.	Cost of reproduction new.	Depreciation.	Cost of reproduction new, less deprec.
1.	**Preliminary costs**	$1,000	....	$1,000
2.	**Real estate & rights of way:**			
	(a) Spring Tracts:			
	Spring Tracts #1, incl. Rt. of W	1,500	....	1,500
	" " #2 " "	1,500	....	1,500
	" " #3 " "	1,200	....	1,200
	" " #4 " "	1,200	....	1,200
	" " #5 " "	1,200	....	1,200
	" " #6 " "	2,000	....	2,000
	" " #7 " "	500	....	500
	" " #8 " "	500	....	500
	" " #9 " "	500	....	500
	" " #10 " "	500	....	500
	" " #11 " "	500	....	500
	" " #12 " "	300	....	300
	" " #13 " "	300	....	300
	" " #14 " "	300	....	300
	" " #15 " " & Bldgs	5,000	....	5,000
	" " #16 " "	600	....	600
	" " #17 " "	1,000	....	1,000
	" " #18 " "	1,500	....	1,500
	" " #19 " "	2,500	....	2,500
	" " #20 " "	100	100	....

Detailed Schedule of Values.—Continued.

Item No.	Description.	Cost of reproduction new.	Depreciation.	Cost of reproduction new, less deprec.
	Spring Tracts #21 incl. Rt. of W.	1,000	....	1,000
	" " #22 " "	1,500	1,500	....
	" " #23 " "	6,000	....	6,000
	15.25 Acres containing site of twin tanks—$100 per acre.	1,525	....	1,525
	99.36 Acres purchased as site of reservoir and dam	2,600	2,600	....
	1.62 Acres in Ada Pumping Station Lot	250	....	250
	46.50 Acres in H. C. Ruble farm, incl. bldgs.	500	400	100
	Lot 1, Sec. 22 Bluefield (Office Lot)	4,500	....	4,500
	Bland St. Tank lot	600	....	600
	(*b*) Pipe Line Rights of Way	2,500	....	2,500
	Totals, Item 2 (*a* & *b*)	43,675	....	39,075
	Not used or useful in furnishing the service.			
1214	(*c*) Buildings & Improvements:			
	One story frame cottage at Beaver Pond Springs—708 sq. ft. @ 80¢	566	....	....
	Age 22 life 40.			
	Depreciation 36%	....	204	362
	One story cottage of 3 rooms at Ada Pumping Station—457 sq. ft. @ 70¢	320	....	....
	(Not used and not in condition for use.)			

(Not used and not in condition for use.)

Depreciation 10 %	....	320	....
Tool house at Spring No. 6	22	....	....
Not used or useful.			
Depreciation 100%	....	22	....
House, Barn, Crib, Spring House, Orchard, fences, etc. on Henry Bailey farm (Included in price of farm):			
Farm House at Ada Spring (#21)—			
7,100 cu. ft. @ 4¢	284	....	....
Age 13, life 25.			
Depreciation 40%	....	114	170
Barn at Ada Spring—			
2,170 cu. ft. @ 3¢	65	....	....
Depreciation 40%	....	26	39
Spring House, Dairy or Root House and Tool House at Ada Spring	45	....	....
Depreciation 40%	....	18	27
Walks & Fences at Ada Spring—			
5,500′ B. M. lumber @ $25 M′ $137.50			
148 posts, set @ 30¢ 44.40			
1,750 ft. barbed wire strung 1.10	183	....	....
Depreciation 40%	....	73	110
Farm House & Tool House on Ruble Farm (Included in Item 2*a*.)			
Office Building, including plumbing heating system wiring & fixtures also including Garage, complete	4,500	....	....

Detailed Schedule of Values.—Continued.

Item No.	Description.	Cost of reproduction new.	Depreciation.	Cost of reproduction new, less deprec.
	Age 2, life 75.			
	Depreciation 1%	....	45	4,455
	Totals Item 2.....	5,985		5,163
	Totals, Item 2.....	$49,660		$44,238
1215				
	3. Gravity Springs:			
	(See summary of similar quantities at springs in table on sheet 11-*a*.)			
	1,243 8′ Chestnut Fence Posts @ 40¢.....	497.20		
	Do., hauled, carried & set @ 20¢.....	248.60		
	753.5 rods fence wire @ 33¢.....	248.65		
	Do., hauled, carried & Stapled to posts @ 12¢...	90.42		
	270 rods barbed wire @ 2.5¢.....	6.75		
	Cartage & labor @ 1¢.....	2.70		
	14 Frame headhouses with concrete basins, aver. @ $45	630.00		
		1,724.32	1,724	
	Average age 8 years.			
	" life 30 "			

Spring No.	No. of fence posts, 8′ chestnut.	Rods of wire fence.	Rods of barbed wire.	Acres cleared o brush & dead w
1	60	36½	73	0.
2	64	39	78	0.
3	190	115	..	1.
4*a*	196	118	118	2.
4*b*	...	...	..	...
5	60	36½	..	0.
6*a*	260	158	..	4.
6*b*	...	...	..	...
7*a*	155	94	..	1.
7*b*	...	...	..	...
7*c*	...	...	..	...
9	145	88	..	1.
10	46	28	..	0.
11	67	40½	..	0.
Totals—Grav. Spgs.	1,243	753½	270	13.
12	54	33	..	0.
13	52	31½	..	0.
14	110	65	..	0.
15	40	24	..	...
16	88	53½	..	1.
17	165	99	..	1.
18*a*	420	255	..	15.
" *b*	...	...	..	...
19, 20	No development.			
Totals for above Spgs., 12-20.	929	561	..	19.
Grand Total	2,172	1,314½	270	32.

*Trench length is 100′ less. See Inv'y, p. 47.
†Also 350′ of 3″ C. I. Pipe.
‡Also 180′ of 4″ C. I. Pipe.

Detailed Schedule of Values.—Continued.

mmary of Similar Items of Work & Materials Involved in Improvement of Springs Nos. 1-20.

Acres ared of rush & d wood.	Cu. yds. grading, earth & rock.	Lin. ft. tile pipe laid.	Cu. yds. rock hammered to small pcs.	Lin. ft. cast iron blow-off pipe.		Lin. ft. vitrified overflow pipe.		Blow-off valves.		Head-house (kind).	Distance to carry materials.	Spring purchas'd (yr.).	Improvements made.
				4".	6".	4".	6".	4".	6".				
0.5	100	40	13	9	....	9	....	1	....	Frame	500′	1888	1906–07
0.5	100	90	20	5½	....	10	....	1	....	"	1,000′	"	"
1.628	75	1,048	234	4	....	8	....	1	....	"	500	1890	"
2.26	55	335	75	4	....	5	....	1	....	"	300	"	"
...	...	635	140	6	....	54	....	1	....	"	500	"	"
0.5	20	185	41	4	....	4	....	1	....	"	500	"	"
4.91	200	2,530	562	...	4½	..	43	..	1	"	....	"	1908
...	...	990	220	4½	....	20½	3	1	....	"	....	"	"
1.5	...	20	4½	4	....	17½	....	1	....	"	....	1908	"
...	...	560	83	4	....	40	....	1	....	"	....	"	"
...	...	250	55	45½	....	11½	....	1	....	"	....	"	"
1.17	...	750	167	...	....	..	....	..	....	"	500	1908	"
0.3	...	105	19	5	....	35	19	1	....	"	500	"	"
0.35	...	10	2	20½	....	..	....	1	....	"	....	"	"
13.618	550	7,548	1,635½	116	4½	214½	65	12	1	14 Fr.	....	....	....
0.354	300	368	82	...	4½	12	8	..	1	"	400′	1910	1912
0.372	645	200	45	3½	....	37	....	1	....	"	....	"	"
0.509	2,100	188†	42	9	....	9	....	1	....	"	....	"	"
...	85	...	...	...	....	..	....	..	....	.....	....	....	....
1.058	20	525	117	11½	....	2	....	1	....	Concr.	500′	"	1912
1.99	30	440‡	98	17	....	4	....	1	....	"	....	"	"
15.	900	125	28	12	9	..	....	1	....	"	800′	"	"
...	...	1,824*	385	...	9½ 5′ of 8″	..	17½′ of 8″	..	1 8″ V.	"	800′	"	"
19.283	4,080	3,670	797	53	23′ of 6″ 5′ " 8″	64	8′ of 6″ 17½′ " 8″	5	1 6″ 1 8″	3 Fr. 4 Concr.	....	....	....
32.901	4,630	11,218	2,432½	169	27½′ " 6″ 5′ " 8″	278½	73 " 6″ 17½ " 8″	17	2 6″ 1 8″	17 Fr. 4 Con.	....	....	....

Detailed Schedule of Values.—Continued.

Improvement of Springs.

Infiltration Lines Classified.

Spring No.	4" tile pipe.										6" Tile pipe.				
	3' trench, ½ rock.	3' trench, solid rock.	4' trench.	4' trench, ½ clay, ½ boulders.	4' trench, ½ sol. rock.	4' trench, ⅔ sol. rock.	4' trench, rock.	5' trench, clay & boulders.	5' trench, rock.	6' trench, ½ large rocks.	10' trench, ½ large rocks.	4' trench, ½ rock.	4' trench, ⅔ solid rock.	4' trench, rock.	5' trench, clay & boulders.	6' trench.
1	..	...	...	....	...	....	20	....	...	...	...	..	..	20	...	...
2	..	...	...	90	...	....	...	....	...	...	...	..	..	.	...	...
3	..	...	...	....	...	1,038	...	....	...	...	...	..	10	..	...	...
4*a*	..	...	...	325	...	....	...	....	...	...	...	10	..	..	...	...
4*b*	..	...	...	....	...	625	...	....	...	...	...	..	10	..	...	...
5	..	...	...	175	...	....	...	....	...	...	...	10	..	..	...	...
6*a*	..	...	...	....	...	....	...	2,203	...	...	...	..	..	..	327	...
6*b*	..	...	595	....	...	....	...	....	...	...	...	..	..	..	...	395
7*a*	..	...	...	20	...	....	...	....	...	...	...	..	..	..	...	...
7*b*	..	560	...	....	...	....	...	....	...	...	...	..	..	..	...	...
7*c*	..	...	...	....	250	....	...	....	...	...	...	..	..	..	...	...
9	..	...	...	....	...	....	750	....	...	...	...	..	..	..	...	...
10	30	...	25	....	...	....	50	....	...	...	...	..	..	..	...	...
11	..	...	10	....	...	....	...	....	...	...	...	..	..	..	...	...
12	..	...	...	....	...	....	...	....	...	238	130	..	..	..	...	...
13	..	...	...	....	...	....	...	200	...	...	...	..	..	..	...	...
14	..	...	...	....	...	....	...	93	95	...	...	..	..	..	...	...
16	..	...	...	525	...	....	...	....	...	...	...	..	..	..	...	...
17	..	...	...	440	...	....	...	....	...	...	...	..	..	..	...	...
18*a*	..	...	...	....	...	....	...	....	125	...	...	..	..	..	...	...
18*b*	..	...	...	....	...	....	...	1,300	71	153*	200	..	..	..	...	...
21	..	...	...	....	...	....	...	....	...	...	...	..	..	..	...	...
Totals	30	560	630	1,575	250	1,663	820	3,796	291	391	330	20	20	20	327	395

*100 Ft. of this trench contains 2 lines of pipe.

Depreciation 16%	....		276	1,448
13.6 Acres cleared of brush & dead wood @ $15	204.00			
550 Cu. Yds. Grading, earth & rock @ 75¢	412.50			
6,766 Lin. Ft. 4" Vit. Drain Tile (wt. 60,354#) @ 7.5¢	507.45			
782 Lin. Ft. 6" Vit. Drain Tile (wt. 11,730#) @ 12¢	93.84			
Cartage & distributing (36 T.)	125.00			
7,548 Lin. Ft. trench opened & pipe laid	4,346.90			
1,635½ Cu. Yds. rock hammered to small pieces & placed in trench @ $1	1,635.50			
Completion of backfilling with earth—850 Cu. Yds. @ 15¢	127.50			
Concrete retaining wall backed by broken stone at Spring 63	25.00			
Overflow & Blowoff Piping in place—				
116 Lin. Ft. 4" C. I. Pipe @ 40¢	46.40			
4½ " 6" " " @ 60¢	2.70			
214½ " 4" Vit. " @ 15¢	32.18			
65 " 6" " " @ 20¢	13.00			
12 4" Gate Valves @ $9	108.00			
1 6" " " @ $14	14.00			
	7,693.97	7,694		
Depreciation, nil.	....			7,694
Totals, Item 3		$9,418		$9,142

At Bluefield, in cars or yard.

(Here follow two tables marked pages 1216 and 1217.)

Item No.	Description.	Cost of reproduction new.		Depreciation.	Cost of reproduction new, less deprec.
4.	**Ada Springs:**				
	(See summary of similar quantities, sheet 11-*a*.)				
	929 8′ Chestnut Posts @ 40¢	371.60			
	Hauling, carrying & setting @ 20¢	185.80			
	561 rods wire fence @ 33¢	185.13			
	Hauling, carrying & Stapling to posts @ 12¢	67.32			
	3 Frame headhouses, incl. concrete basins @ $45.	135.00			
	4 Concrete headhouses and basins, aver. @ $50.	200.00			
		1,144.85	1,145		
	Age 3 yrs. life 30 yrs.				
	Depreciation 6%	....		69	1,076
	19.28 Acres clearing of brush & dead wood @ $15	289.20			
	4,080 Cu. Yds. grading, earth & rock @ 75¢	3,060.00			
	3,670 Lin. ft. 4″ Vit. Tile Pipe (Wt. 33,030#) @ 7.5	275.25			
	Cartage & Distribution	50.00			
	Trenching & laying pipe (3,570′ trench)	2,203.83			
	797 Cu. Yds. Stone hammered to small pieces & placed in trench @ $1	797.00			
	750 Cu. Yds. earth replaced in trench @ 15¢	112.50			
	Overflow & Blowoff piping installed—				
	53 L. Ft. 4″ C. I. Pipe @ 40¢	21.20			
	23 " 6″ " " @ 60¢	13.80			

5 " 8" " " @ 80¢	4.00				
64 " 4" Vit. " @ 15¢	9.60				
8 " 6" " " @ 20¢	1.60				
17½ 8" " " @ 28¢	4.90				
5 4" Gate Valves @ $9	45.00				
1 6" " " @ $14	14.00				
1 8" " " @ $20	20.00				
350 Lin. Ft. 3" C. I. Pipe @ 70¢	245.00				
180 " 4" " " @ 80¢	144.00				
	7,310.88	7,311			
Depreciation, nil.	....	....	....	7,311	
Development work as listed (Inv. p. 48)	....	....	30	....	
Depreciation 100%	30	....	....	....	
At Bluefield.					
1219					
Spring No. 21:					
30 rods woven wire fence @ 33¢	9.90				
63 Chestnut posts @ 40¢	25.20				
Cartage & labor on fence	16.20				
		51			
Age 9 yrs., life 30 yrs.					
Depreciation 20%	....	....	10	41	
163 Cu. Yds. Excavation (earth) 35¢	57.05				
163 " " (boulders) @ $1	163.00				
870 " " (shale) @ 60¢	522.00				
500 " " (stone) @ $2	1,000.00				
44½ " concrete in retaining walls, etc. @ $7	311.50				

Detailed Schedule of Values.—Continued.

Item No.	Description.		Cost of reproduction new.	Depreciation.	Cost of reproduction new, less deprec.
	1,630 C. Yds. Stone hammered to small pieces @ $1	1,630.00			
	652 C. Yds. Earth & shale replaced @ 15¢	97.80			
	8,800 Sq. Ft. of sod @ 1¢	88.00			
	4′ 10″ C. I. Pipe in place @ 1.25	5.00			
	12′ 12″ Vit. Tile " " @ 40¢	4.80			
	Total for Basin	3,879.15	3,879		
	Depreciation, nil.		....	....	3,879
	3.8 Cu. Yds. Concrete in wall @ $7	26.60			
	10′ B. M. in corner posts @ 4¢	.40			
	44 lbs. steel rods, in place @ 4¢	1.76			
	31½ Sq. Ft. ¼″ mesh screen 5¢	1.68			
	50′ B. M. Oak in cover	1.50			
	28′ 2″ quarter round pine	.30			
	Hinges, hasp & padlock	2.00			
		34.24	34	2	32
	Spring House:				
	37 Cu. Yds. Excavation @ 50¢	18.50			
	32 " Concrete @ 7.50	240.00			
	64 Lin. Ft. 2″ W. I. Pipe @ 12¢	7.68			
	64 " 1½″ " @ 8¢	5.12			

	88 Lbs. C. I. Col. plates @ 3¢	2.64			
	320 " ¾" steel rods in place @ 4¢	12.80			
	16 Tie rods with eyes & turnbuckles @ 75¢	12.00			
	8 Clevises @ 15¢	1.20			
	260 Sq. Ft. of 1" mesh Screen @ 5¢	13.00			
	1 Door and frame	1.50			
	2 Strainers for outlet box	.50			
	1 Padlock	1.00			
	1,130 Ft. B. M. Pine Lumber in Roof @ $40/M'	45.20			
1220	At Bluefield.				
	145 Lin. Ft. Moulding	1.50			
	3.07 Squares dipped & painted Shingles @ $10	30.00			
	Painting two coats	15.00			
		407.64	408		
	Age 9 yrs., life 50 yrs.				
	Depreciation 7%	....	....	28	380
	Piping:				
	16' 18" tile in 4' trench @ 60¢	12.80			
	21 18" " in spring house 65¢	13.63			
	1' 18" vitrified tee	2.75			
	2 Iron bound wooden caps With bolts	5.00			

Detailed Schedule of Values.—Continued.

Item No.	Description.		Cost of reproduction new.	Depreciation.	Cost of reproduction new, less deprec.
	Miscellaneous:				
	181 Lin. Ft. dry rubble wall 4' high @ 30¢....	54.30			
	220 Cu. Yds. Excavation in ditches @ 35¢.....	77.00			
	150 Lin. Ft. 2" Wr. Iron Pipe @ 15¢.....	22.50			
	43 " ¾ " " " @ 10¢.....	4.30			
	17 " ¼ " " " @ 5¢.....	.85			
	1 Bibb Cock.....	.75			
	1 2" Reducer	.25			
	1 1" Globe Valve.....	1.00			
	113 Evergreen & Poplar Trees set out @ $1....	113.00			
	Sub-total, Piping & Misc.....	308.15	308		
	Depreciation, nil.		....	....	308
	Spring #22 (Condemned and not used):				
	Pay Roll Account plus materials.....		1,600		
	Depreciation 100%		....	1,600	....
	Totals, Item 4.....		$14,766		$13,027
5.	Jarreli Springs (#19):				
	(No development work done. Land and spring included in item 2.)				

6. Beaver Pond Spring (#23):

47 rods fence wire, erected @ 45¢	21.15			
94 Chestnut fence posts, set @ 60¢	56.40			
300 Ft. B. M. Lumber in board fence	7.50			
230 Lin. Ft. Dry Rubble Wall @ 20¢	46.00			
		131		
Depreciation 40% on fence		....	34	97
Totals, Item 6		$131		$97

7. Reservoir & Dam (Abandoned and in bad repair)

Dam, spillway & blowoff pipe complete	4,000		
Depreciation 100%	....	4,000	....
Totals, Item 7	$4,000		

8. Pipe Lines, Gravity Springs to City:

(a) Pipe, Specials & Valves:

C. I. Pipe, Cl. B., A. W. W. Assn., f. o. b. cars Bluefield—				
202.014 Tons 6" @ $26	5,252.36			
112.145 " 4" @ $27.50	3,083.99			
29.576 " 3" @ $30	887.28			
3,787 Lbs. C. I. Fittings @ 2¾¢	104.04			

Detailed Schedule of Values.—Continued.

Item No.	Description.		Cost of reproduction new.	Depreciation.	Cost of reproduction new, less deprec.
	4 6″ double gate valves @ 12.60	50.40			
	13 4″ " " @ 7.65	99.45			
	4 4″ check valves @ 9.25	37.00			
	346 Tons hauled & distributed @ 1.50	519.00			
	Total for pipe & fittings	10,033.52	10,034		
	Age 8, life 100.				
	Depreciation 1%		....	100	9,934
	(*b*) Laying Pipe Lines:				
	12,133 Lin. Ft. 6″ pipe laid @ 9¢	1,091.97			
	10,336 " 4″ " " @ 8¢	826.88			
	3,652 " 3″ " " @ 7½¢	273.90			
	708 Cu. Yds. Rock excav'n @ $3	2,124.00			
	1,530 Lin. Ft. shale trench @ 6¢	91.80			
	23,113 Lbs. lead & yarn @ 5¢	1,155.65			
			5,564		
	Depreciation 1%		....	56	5,508
	Totals, Item 8		$15,598		$15,442

9. Pipe Lines, Ada Springs to City:

1222 (*a*) Pipe, Specials & Valves:

1,070.794 Tons 10", 8" & 6" @ $26	27,840.64			
22.297 " 4" C. I. Pipe @ 27.50	613.17			
57.461 " 3" " " @ 30	1,723.83			
13,334 Lbs. C. I. Fittings @ 2¾¢	366.68			
8 4" Double gate Valves @ 7.65	61.20			
9 6" " " @ 12.60	113.40			
1 8" " " @ 19	19.00			
1 10" " " @ 27	27.00			
1 6" Hor. Swing Check Valve @ 12.80	12.80			
2 10" " " @ 33	66.00			
1,158 Tons hauled & distributed @ 2.50	2,895.00			
Total (*a*)	33,738.72	33,739		
Age 3, Life 100.				
Depreciation, nil.		....	....	33,739

(*b*) Pipe Laying—Ordinary clay & earth trenches:

21,570 Lin. Ft. 10" Pipe @ 11¢	2,372.70			
9,401 " 8" " @ 10¢	940.10			
2,943 " 6" " @ 9¢	264.87			
2,055 " 4" " @ 8¢	164.40			
7,094 " 3" " @ 7.5¢	532.05			
	4,274.12	4,274		
Depreciation, nil.		....	....	4,274

Detailed Schedule of Values.—Continued.

Item No.	Description.		Cost of reproduction new.	Depreciation.	Cost of reproduction new, less deprec.
	(*c*) & (*d*) Extras for Unusual Excavation:				
	3,065 Cu. Yds. Rock @ $3	9,195.00			
	4,200 Lin. Ft. Shale @ 6¢	252.00			
	6,400 " Wet trench pumping	64.00			
	700 " Steep hillside work	70.00			
	6 Stream crossings, add'l @ 15	90.00			
	2 Railroad Culvert Crossings @ 15	30.00			
			9,701	-	
	Depeciation, nil.		....	....	9,701
1223	Totals, Item 9		$47,714		$47,714
	10. Pipe Line, Beaver Pond Spring to City:				
	99.72 Tons 10" C. I. Pipe @ $26	2,592.72			
	Do. hauled & distributed @ 1.50	149.58			
	3,440 Lin. Ft. Pipe Laying @ 11¢	378.40			
	155 Cu. Yds. Rock excav. ext. @ $3	465.00			
		3,585.70	3,586		
	Age 23, Life 100.				
	Depreciation 3%		....	108	3,478
	Totals, Item 10		$3,586		$3,478
	11. Ada Pumping Station Building:				

11. Ada Pumping Station Building:

205 Cu. Yds. Excavation, clay & muck, bracing & pumping included @ 1.50	307.50
200 Cu. Yds. Concrete in Foundation walls, including form-work on approx. 73% @ 7.50.	1,500.00
60.2 Cu. Yds. Solid Concrete wall @ 8	481.60
2.9 M Com. red brick in P. C. Mortar @ 20	58.00
3,357 Sq. Ft. of 15" com. block wall @ 34¢	1,141.38
3,884 Sq. Ft. of 20" com. block wall @ 45¢	1,747.80
116 Sq. Ft. of 10" com. block wall @ 23¢	26.68
130 Galv. Iron wall stays @ 10¢	13.00
26 Tons structural steel in roof (cost)	2,468.00
18.97 M' B. M. Lumber in Joists, Purlins, Sheathing & Jack-rafters @ 35	663.95
1.243 M' B. M. #1 Dressed Poplar in ventilator @ 50	62.15
560 Lin. Ft. 2½" x 3" moulding in place @ 2½¢	14.00
75.22 Squares Red Tile Roofing laid @ 10	752.20
Copper nails for same (cost)	220.91
118 Lin. Ft. fancy tile ridge roll @ 40¢	47.20
1224	
Gutter and downspouting (contract)	165.00
320 Ft. B. M. #1 Poplar in gutter @ 35/M'	11.20
Painting all exterior wood & metal, 2 coats (doors & windows not incl.)	125.00
2,000 Sq. Ft. 8" cement floor of engine room on 18" cinders @ 16¢	320.00

Detailed Schedule of Values.—Continued.

Item No.	Description.		Cost of reproduction new.	Depreciation.	Cost of reproduction new, less deprec.
	1,100 Ft. B. M. Oak wainscoting with cap & moulding	55.00			
	All doors & windows complete including hardware, setting & painting	900.00			
	3,800 Sq. Ft. cement block wall painted 2 coats @ 3¢	114.00			
	3,400 Sq. Ft. roof sheathing painted 2 coats @ 3½¢	119.00			
	102 Sq. Yds. Wainscoting filled & varnished 2 coats @ 40¢	40.80			
	750 Sq. Ft. 8" conc. floor in Boiler Room on 18" cinders @ 16¢	120.00			
	637 Sq. Ft. 8" conc. floor in Coal House & Tool Room @ 14¢	89.18			
	Coal Bin & Tool Room Roof	130.00			
	Shelving & painting in Tool Room	26.00			
		11,829.55	11,830		
	Age 7, Life 75.				
	Depreciation 2%		....	237	11,593
	Totals, Item 11		$11,830		$11,593

12. Steel Stack:

(*a*) (*b*) Excavation & Foundation:				
165 Cu. Yds. muck excavation, incl. bracing & pumping @ $1.50	247.50			
75 Cu. Yds. mass concrete, containing large boulders @ $3.50	262.50			
1225				
2.7 M Fire brick in place @ 30	81.00			
1,170# Special castings (involved pattern making) in place @ 6¢	70.20			
	661.20	661		
Depreciation, nil.	....	....	....	661
(*c*) Steel Stack (Erected & Painted):				
21,500# Steel plate & ladder @ 4½¢	967.50			
6,800# C. I. Base ring & anchor plates @ 4¢	272.00			
550# Anchor bolts & nuts @ 4¢	22.00			
	1,261.50			
9.5 M Circle Fire Brick @ 31	294.50			
1.4 M Com. red brick @ 16	22.40			
9 Cu. Yds. Cinder filling @ 1	9.00			
	1,587.40	1,587		
Age 8, Life 50.				
Depreciation 6%	....	....	95	1,492
Totals, Item 12		$2,248		$2,153

Detailed Schedule of Values.—Continued.

Item No.	Description.		Cost of reproduction new.	Depreciation.	Cost of reproduction new, less deprec.
13. Coal Chute:					
	62 Cu. Yds. Concrete, requiring form work @ 8..	496.00			
	2,004# Steel Rods in roof @ 3¢.....	60.12			
	127 Sq. Yds. Woven fence wire in roof @ 5¢....	6.35			
		562.47	562		
	Depreciation (same as bldg.) 2%.....		....	11	551
	Totals, Item 13.....		$562		$551
14. Oil House:					
	3 Cu. Yds. Concrete founda. @ 7.....	21.00			
	213 Sq. Ft. of 8" conc. block wall @ 18¢.....	38.40			
	½ Cu. Yd. Concrete in end wall.....	7.50			
1226	2.7 Cu. Yds. concrete in arched roof @ 8.....	21.60			
	653# Steel in roof @ 3¢.....	19.59			
	Doors and frame set (unpainted).....	5.00			
		113.09	113		
	Age 7, Life 75.				
	Depreciation 2%		....	2	111
	Totals, Item 14.....		$113		$111

15. **Worthington Pump:**

1 20″ x 10¼″ x 15″ double acting horizontal duplex pump, installed	900.00			
Foundation & Pit—				
10 Cu. Yds. Excavation @ 1	10.00			
8 " stone masonry @ 5.50	44.00			
850# plate bolted on foundation @ 3¢	25.50			
10½ Cu. Yds. concrete in pump pit walls & steps @ 7.50	78.75			
Suction & Discharge Pipe, installed (as per inventory P. 69)	33.00			
	1,091.25	1,091		
Age 15, Life 40.				
Depreciation 20%	....		218	873
Totals, Item 15		$1,091		$873

16. **Snow Pump:**

Pumping engine, with condenser, vacuum pumps (dry & wet) air pumps air chambers and other accessories as listed in inventory, installed	18,000.00			
37 Cu. Yds. Rock excavation @ 2.50	92.50			
27 " Earth " @ 50¢	13.50			

Detailed Schedule of Values.—Continued.

Item No.	Description.		Cost of reproduction new.	Depreciation.	Cost of reproduction new, less deprec.
	91 Cu. Yds. Concrete @ 6.....				
	Suction & Discharge pipe as per inventory (P. 70)	410.00	19,062		
	Age 8, Life 60.				
	Depreciation 4%		....	762	18,300
	Totals, Item 16.....		$19,062		$18,300
1227					
	17. Pump Auxiliaries:				
	1 Epp. Corp. 5¼" x 3½" x 5" duplex steam pump (feed water)	125.00			
	1 Worthington Pump Heater.....	200.00			
	Fittings & installation.....	5.00			
	2 Wheeler Feed Water Heater-.....	335.00			
	1 Oil Separator, Tank & Fitting.....	215.00			
	Hot Water Tank	35.00			
	Steam Separator (4").....	30.00			
		945.00	945		
	Age 8, Life 35.				
	Depreciation 13%		....	123	822
	Totals, Item 17.....		$945		$822

18. Boiler Plant:				
2 Stirling 148 H. P. Boilers with settings & foundations complete (Inv. item 18 *a* & *b*)	3,833.00			
Piping listed with boilers (inv. items 18 (*b*) & (*c*)	107.00			
		3,940		
Age 8, Life 30.				
Depreciation 16%		....	630	3,310
Smoke Flue (Inv. item (*e*)		377	....	....
Age 8, Life 75.				
Depreciation 2%		....	7	370
Totals, Item 18		$4,317		$3,680
19. All Piping in Station:				
(*a*) Hot Water pipes (as per inv.)	96.24			
(*b*) Miscellaneous water pipes (as per inventory)	150.70			
(*c*) Steam Piping in station (as per inventory)	705.00			
(*d*) Miscel. Drain Piping & vents	260.00			
	1,211.94	1,212		
Age 8, Life 30.				
Depreciation 16%		....	194	1,018
Totals, Item 19		$1,212		$1,018

Detailed Schedule of Values.—Continued.

Item No.	Description.		Cost of reproduction new.	Depreciation.	Cost of reproduction new, less deprec.
20. Piping in Station Yard:					
1228	Pump Suctions:				
	2,425 Tons 10" C. I. Pipe @ 26 f. o. b. Cars at W. Wks. Siding	63.05			
	2,000 Lbs. C. I. Fittings in place @ 3¢	60.00			
	1 10" Hub end gate valve	.....			
	77 Lin. Ft. pipe unloaded and laid in trench @ 20¢	15.40			
		168.45	169	....	169
	Pump Discharge Line:				
	4,230# 10" C. I. (flanged) pipe @ 3¢	126.90			
	8.46 Tons 10" C. I. (H. & S.) pipe @ 26	219.96			
	9,220 Lbs. C. I. Fittings (part flanged) @ 4¢	368.80			
	2 10" Eddy Gate Valves (High Pressure) @ 45	90.00			
	209 Ft. Pipe laying @ 20¢	41.80			
		847.46	847		
	Depreciation, nil.		....	....	847
	Connection from Spring #22:				
	1.665 Tons 6" C. I. Pipe @ 26	43.29			
	684 Lbs. C. I. Fittings @ 3¢	20.52			

1 6″ Check Valve	13.00			
2 6″ Gate Valves @ 13	26.00			
101 Ft. Pipe laying, including local transportation of pipe & including lead, yarn etc. @ 15¢	15.15			
	117.96	118	18	100
Blow-offs from Spring line and Boilers to Creek:				
60 Lin. Ft. 5″ W. I. Pipe laid in 3′ trench (approx. ½ is extra heavy pipe) @ 18¢	10.80			
Blow-off from Sec. Heater to Creek:				
40 Ft. of 1″ Galv. W. I. screw pipe, laid @ 10¢	4.00			
1229				
Drain from Northington Pit to Creek:				
37 Ft. of 6″ Vit. tile pipe @ 18¢	6.66			
	21.54	22	6	16
Totals, Item 20		$1,156		$1,132
21. Concrete Retaining Wall:				
140 Cu. Yds. concrete @ 7	980.00			
350 " earth fill @ 25¢	87.50			
		1,068	....	$1,068
Totals, Item 21		$1,068		$1,068

Detailed Schedule of Values.—Continued.

Item No.	Description.	Cost of reproduction new.	Depreciation.	Cost of reproduction new, less deprec.
22.	Station Yard Improvements:			
	500 Cu. Yds. rock excavation @ 1.50	750	....	750
	565 " Earth fill @ 25¢	141	....	141
	200 Lin. Ft. wire fence, including posts, complete @ 8¢	16	4	12
	170 Lin. Ft. log retaining wall @ 30¢	51	21	30
	210 Cu. Yds. fill at coal chute @ 75¢	158		158
	Totals, Item 22	$1,116		$1,091
23.	Station Miscellaneous:			
	Radiator frame	6	....	6
	Wienman simplex pump 6 x 3¾ x 8 (not used)	115	115	....
	Erie City Boiler, 80 H. P. (not used) and located on open ground	800	800	....
	Office table (oak) top 36" x 52" 4 drawers	12	12	10
	Pictures & Frames—5 @ 2.00	10	....	10
	Coal Scales and pit	90	10	80
	Coal Wagon	35	3	32
	Cross #3 Oil Filter	55	5	50
	Pit to cavern under engine room	50	1	49
	Pit for Snow Auxiliaries—			
	51 Cu. Yds. earth excav. @ 50¢ 25.50			
	13 " concrete in walls 7.50 97.50			
	250 Sq. Ft. Floor @ 12¢ 30.00			
		153	3	150

1230	Iron Spiral Stairway to Pit	80	2	78
	Board Walk over Aux. Pit	4	1	3
	Hangers for Pipes	7	....	7
	Totals, Item 23	$1,417		$475

24. Beaver Pond Station:

	4 Cu. Yds. Rubble Masonry in piers @ 5	20.00		
	3.590 M′ B. M. Oak Lumber in framing @ 32.50	116.80		
	2.553 M′ B. M. sheathing on walls @ 30	76.59		
	2.015 M′ B. M. #1 Com. Pine Flooring @ 45	90.68		
	1.251 M′ B. M. rough oak in coal bin walls & floor @ 30	37.53		
	237 Ft. B. M. Trim at eaves @ 50	11.85		
	Doors & Windows	40.00		
	5 Rolls bldg. paper applied @ 1.50	7.50		
	25.65 Squares Corr. Galv. Iron Siding @ 4.50	115.42		
	20.25 Squares Carey Pat. roofing @ 4	81.00		
	Painting doors, windows & eave trim	12.50		
		609.87	610	
	Depreciation (largely functional) 90%		....	549	61
	Totals, Item 24		$610		$61

Detailed Schedule of Values.—Continued.

Item No.	Description.		Cost of reproduction new.	Depreciation.	Cost of reproduction new, less deprec.
25.	Steel Stack & Breeching:				
	1,800 Lbs. #10 Steel in Stack & Breeching @ 7¢.	126.00			
	6 Cu. Yds. Excavation for anchors @ 35¢.....	2.10			
	2 Cu. Yds. Concrete for anchors @ 6.....	12.00			
	4 1″ Anchor rods with eye & washer plate 1′ x 1′ x ½″ @ 2.50.....	10.00			
	710 Lin. Ft. ⅜″ wire rope guys @ 5¢.....	35.50			
		185.60	186		
	Depreciation 90%		....	167	19
1231	Totals, Item 25.....		$186		$19
26.	Worthington Pump:				
	1 Duplex double acting hor. steam pump, 20″ x 9″ x 10″.		800	....	....
	Depreciation (largely functional 60%).....		....	400	320
	Foundation		30	27	3
	Totals, Item 26.....		$830		$323
27.	Feed Water Heater:				
	Heater and foundation.....		160	96	64
	Totals, Item 27.....		$160		$64

28. *Boiler Plant:*			
1 80 H. P. Erie City Iron Wks. Hor. tubular boiler, with foundation & setting, complete	1,100	1,100	....
1 100 H. P. Erie City Iron Wks. Hor. tubular boiler with foundation & setting complete	1,300	1,000	300
Piping on boilers	10	8	2
Totals, Item 28	$2,410		$302
29. All Piping in Station:			
Water Piping (1½" & 1¼") installed 20.00			
Steam Piping (4" & 5") & Valves installed 146.33			
Misc. Small Pipe & Valves Installed 27.08			
	193		
Depreciation 70%	....	135	58
Suction Pipe for Pump (8" & 10" Cast Iron)	40	5	35
Discharge Pipe for Pump (8" C. I.)	111	6	105
Totals, Item 29	$344		$198

Item No.	Description.		Cost of reproduction new.	Depreciation.	Cost of reproduction new, less deprec.
30.	Intake & Pipe Line to Pumping Station:				
	Intake box & screen plate	4.50			
	8,600# 10″ C. I. Pipe, deliv'd @ 1.4¢	120.40			
	202# Specials " @ 3¢	6.06			
	1 10″ Foot Valve	14.00			
	135′ Pipe laying, incl. lead etc. @ 20¢	27.00			
		171.96	172		
	Depreciation 5%		....	9	163
	Totals, Item 30		$172		$163
31.	Station Miscellaneous:				
	1 1 Pt. Lubricator	5.75			
	1 Revolution counter	3.25			
			9	3	6
	Totals, Item 31		$9		$6
32.	Cast Iron Pipe:				
	1,159.902 Tons 6″ to 10″ Pipe @ 26	30,157.45			
	307.446 Tons 4″ Pipe @ 27.50	8,454.76			

85.009	" 3" " @ 30	2,550.27			
1,552.357	" 3" to 10" Pipe hauled & dist. @ 1.25	1,940.45	43,103		
	Av. Age 12, Life 100 or more. Depreciation 1%		....	431	42,672
	Totals, Item 32		$43,103		$43,672
33. C. I. Pipe Fittings:					
	32.11 Tons @ $52.50 (2⅝¢/#)		1,686		
	(1% Depreciation)		....	17	1,669
	Totals, Item 33		$1,686		$1,669
	F. O. B. Cars Bluefield.				
34. Laying C. I. Pipe:					
1233	(Ordinary work, pipe covered 2 ft., prices include digging and refilling trenches, laying and jointing pipe, furnishing joint materials, tools, etc., but no allowance for special or unusual conditions.)				
15,350	Lin. Ft. 10" Pipe laid @ 22½¢	3,453.75			
11,840	" 8" " " @ 19¢	2,249.60			
31,475	" 6" " " @ 16¢	5,036.00			
28,336	" 4" " " @ 13¢	3,683.68			
10,495	" 3" " " @ 12¢	1,259.40			
			15,682		

Detailed Schedule of Values.—Continued.

Item No.	Description.			Cost of reproduction new.	Depreciation.	Cost of reproduction new, less depr.
	Av. Age 12, Life 75.					
	Depreciation 3%			....	470	15,212
	Totals, Item 34			$15,682		$15,212
35.	Galvanized Pipe in Street Mains:					
	220 Lin. Ft.	2½"	Pipe @ 20¢	44.00		
	2,950 "	2"	" @ 12.6¢	371.70		
	31,055 "	1½"	" @ 9.38¢	2,912.96		
	19,615 "	1¼"	" @ 7.84¢	1,537.82		
	4,470 "	1"	" @ 5.80¢	259.26		
	7,115 "	¾"	" @ 3.98¢	283.18		
	4,060 "	½"	" @ 3.32¢	134.79		
				5,543.71		
	Fittings 5%			277.18		
					5,821	
	Av. Age 12, Life 25.					
	Depreciation 35%			....	2,037	3,784
	Totals, Item 35			$5,821		$3,784

36. Laying Galvanized Mains:					
(Prices on basis of ordinary or usual conditions, extra allowance being made below for unusual difficulties.)				(35%)	
69,485 Lin. Ft. pipe laid @ 6¢		4,169		1,459	2,710
1234 Totals, Item 36		$4,169			$2,710
37. Extras for Difficult Excavation.					
1,285 Cu. Yds. Solid Rock excavation @ $3	3,855.00				
6,680 Cu. Yds. Shale excavation @ 25¢	1,670.00	5,525		Nil.	5,525
1,830 Lin. Ft. trench pumping @ 2¢	37.60				
10 Ft. Extra of 4″ pipe involved in reproduction of line between Hardy & Roanoke Sts. to dodge buildings over existing line @ 45¢	4.50	42		1	41
Totals, Item 37		$5,567			$5,566
38. Steam Railroad Crossings:					
(Amounts in addition to Item 34.)					
Hardy St. near Roanoke St., 20 Ft. length, diagonally under switch track @ 50¢	10.00				
Pearis St. Crossing: 150 Ft. of 4 to 6 ft. extra depth, with 9 tracks obstructing work	200.00				
Thomas St. Crossing: 150 Ft. of 3′ additional depth, with 8 tracks obstructing work, and involving rock excavation under unusually difficult conditions	300.00				

Detailed Schedule of Values.—Continued.

Item No.	Description.		Cost of reproduction new.	Depreciation.	Cost of reproduction new, less deprec.
	Mercer St. Crossing: Total length 320′ of 4″ pipe, crossing under 3 retaining walls and 15 R. R. tracks, terminating in vertical risers 12 ft. & 23 ft. in height	500.00			
	Logan St. Crossing	300.00		(1%)	
			1,310	13	1,297
	Totals, Item 38		$1,310		$1,297
1235					
	39. Street Railway Crossings:				
	24 right angle crossings (C. I. Pipe) of one track each @ 50¢	12.00			
	4 diag. crossings of 1 track each, total length 61 ft. @ 15¢	9.15	21	(1%)	21
	4 right angle crossings (galv. pipe) one track each @ 25¢	1.00	....	....	....
	2 diag. crossings of 1 track each (Total length 26′) @ 1	2.00	3	1	2
	Totals, Item 39		$24		$23

40. Pavements:

(Note: Only such paving as was actually cut through and replaced in laying the mains originally is intended to be included here.)

310 Ft. of 8" pipe laid under brick pavement having concrete base on Federal St.—Princeton to Raleigh @ 75¢.	233	Nil.	233
Totals, Item 40	$233		$233

41. Valves in Mains:

(Prices used include cartage & setting.)

6	10" Double Gate Valve @ 28.65	171.90			
23	8" " " " @ 20.15	463.45			
82	6" " " " @ 13.55	1,111.10			
63	4" " " " @ 8.33	524.79			
20	3" " " " @ 7.08	141.60			
1	8" Check Valve @ 20.60	20.60			
1	6" " " @ 13.75	13.75			
1	10" Electrc. Hyd. Gate Valve	185.00			
1	8" " " " "	165.00			
1	6" " " " "	150.00			
Fittings on El. Hyd. Valves		5.00	2,952	30	2,922
Totals, Item 41			$2,952		$2,922

Detailed Schedule of Values.—Continued.

Item No.	Description.		Cost of reproduction new.	Depreciation.	Cost of reproduction new, less deprec.
42. Valve Boxes on Mains:					
1236	Vault at Pearis & Fourth Sts.	45.00			
	" " Bland & Higginbotham Sts.	40.00			
	" " Princeton & Giles Sts.	35.00	....	(1%)	....
	188 C. I. Valve Boxes @ 1.60	300.80	421	4	417
	Totals, Item 42		$421		$417
43. Hydrants:					
	15 4" hub end Eddy hydrants 2 hose nozzles, 3½ ft. length including 1 length of pine and tee in main for hydrant connection @ 35		525	....	....
	Age 27, life 50.				
	Depreciation 30%		....	158	367
	Totals, Item 43		$525		$367
44. Services & Fittings:					
	(Note: In determining cost of reproduction it is assumed that since consumers have been required to bear the expense of service connections in the past, up to a date subsequent to that of the inventory, namely Aug. 1, 1915, except the cost of furnishing and inserting the corporation cocks in the mains, the property value upon which rates				

for service should yield a fair return should not include investments made by consumers. Therefore, only the expense of furnishing and inserting the corporation cocks is included below.)

55 1″ Mueller D-5051 Corp. Cocks @ 2.25..	123.75			
2 ¾″ " " " @ 1.60..	3.20			
2,201 ½″ " " " @ 1.00..	2,201.00			
C. I. Fittings for 3″ to 6″ Services.....	35.00	2,363	189	2,174
Av. age 10, life 50.		....		
1237 Totals, Item 44.....		$2,363		$2,174

45. **Meters** in Service:

(Prices include couplings and cost of installation.)

1 4″ Gem	160.00
1 2″ Neptune (compound).....	65.00
4 1″ " @ 16.80.....	67.20
1 ¾″ " @ 12.60.....	12.60
347 ½″ " @ 8.40.....	2,914.80
6 2″ Nash @ 50.00.....	300.00
1 1″ " @ 16.80.....	16.80
100 ½″ Nash @ 8.40.....	840.00
1 1½″ Lambert	30.00
1 1″ "	16.80
1 1″ Keystone	16.80
365 ½″ " @ 8.40.....	3,066.00
179 ½″ Empire @ 10.40.....	1,861.60

Detailed Schedule of Values.—Continued.

Item No.	Description.		Cost of reproduction new.	Depreciation.	Cost of reproduction new, less deprec.
	8 ½" Crown @ 15.60	124.60			
	389 ½" Niagara @ 6.80	2,645.20			
	12 ½" Hersey @ 8.40	100.80			
	1 ½" Standard	8.40			
	149 ½" Gamon @ 8.40	1,251.60			
	1,567		13,498		
	Av. Age 5, Life 25.				
	Depreciation 13%		....	1,755	11,743
	Totals, Item 45		$13,498		$11,743
46.	**Meter Boxes and Vaults:**				
	1,558 Standard Meter Boxes @ 3 in place		4,674		
	Av. Age 5, Life 50.				
	Depreciation 4%		....	187	4,487
	Meter Vault on Gravity Springs Line, (including fittings as per inventory)		200	....	....
	Depreciation (functional) 40%		....	80	120
	Brick Meter Vault (N. & W. R. R., Hardy St.)		12	1	11
	" " " (Matz Hotel)		35	1	34
	" " " (Pocahontas Coal Co.)		25	1	24

	434 Standard tile boxes installed in cement walks @ 2....		868	35	833
1238	Totals, Item 46.....		$5,814		$5,509
47.	Twin Tanks:				
	2,963 Cu. Yds. Shale Excav. @ 60¢.....	1,777.80			
	315 " Concrete @ 7.50.....	2,362.50			
			4,140		
	Depreciation, nil.		....	....	4,140
	526,840# Steel in two tanks, erected and painted @ 4.5¢	23,708.00			
	19,630# Steel in roof trussess erected & painted @ 4.5¢	883.00			
	5.5 M' B. M. lumber in sheathing & purlins @ 40	220.00			
	25 Sq. of roof covered with 3 ply tarred felt @ 3	75.00			
	Piping and drains—				
	88' 12" Vit. tile laid @ 50¢.....	44.00			
	8 12" " " tees @ 1.25.....	10.00			
	9,694 Lbs. C. I. (flanged) pipe in place @ 4¢	388.00			
	2,480 Lbs. C. I. fl. Fitt. @ 5¢.....	124.00			
	2 10" Gate Valves @ 29.....	58.00			
	2 12" " " @ 36.....	72.00			
			25,582		
	Age 8, Life 75.				
	Depreciation 2%		....	512	25,070
	Totals, Item 47.....		$29,722		$29,210

Detailed Schedule of Values.—Continued.

Item No.	Description.		Cost of reproduction new.	Depreciation.	Cost of reproduction new, less deprec.
48.	**Bland Street Tank:**				
	1,110 Cu. Yds. Shale excavated and hauled away @ 1		1,100	....	1,100
	100 Cu. Yds. Stone Masonry @ 5.50		550	....	500
	86,600 Lbs. Steel in tank, erected & painted @ 4½¢		3,897	312	3,585
	6 Cu. Yds. Concrete @ 8		48	....	48
	Piping and drains—				
	2,884# 10" C. I. fl. Pipe @ 4¢	115.36			
	8.875 Tons 10" H. & S. " @ 26	230.75			
	974 Lbs. C. I. fl. fittings @ 5¢	48.70			
	5.5 Tons 6" H. & S. pipe @ 26	143.00			
	2,522 Lbs. C. I. H. & S. Fitt. @ 3¢	75.66			
	3 10" Gate Valves @ 29	87.00			
	2 6" " " @ 13.50	27.00			
	278 Lin. Ft. 10" pipe, hauled & laid @ 25¢	69.50			
	330 Lin. Ft. 6" pipe, hauled & laid @ 18¢	59.40			
	15 Lin. Ft. 12" Vit. tile pipe, in place @ 45¢	6.75		(2%)	
	220 Lin. Ft. 10" Vit. tile pipe, in place @ 38¢	83.60	947	19	92
	Totals, Item 48		$6,542		$6,211

Life 75, Age 22.

Depreciation 8%.

49. Electric Transmission Line:					
1239	55 30′ poles set @ 5	275.00			
	58 2 pin arms with braces in place @ 56¢	32.48			
	130 Glass insulators @ 3½¢	4.55			
	510 Lbs. 12 Ga. Copper clad wire @ 15¢	76.50			
	3.4 miles wire stringing @ 10	34.00			
			423		
	Age 8, Average life 25.				
	Depreciation 22%		....	93	330
	Totals, Item 49		$423		$330
50. Laboratory Equipment (Practically new):					
	1 Double wall dry bath	13.33			
	2 Bake ovens	6.50			
	1 Copper Tray	4.80			
	1 Incubator	9.00			
	3 Hot plates	9.70			
	1 Food chopper	5.00			
	1 Arnold Steam Sterilizer	31.50			
	1 Balance	25.11			
	Glassware (approx. est.)	200.00			
			305	....	305
	Totals, Item 50		$305		$305

Detailed Schedule of Values.—Continued.

Item No.	Description.		Cost of reproduction new.	Depreciation.	Cost of reproduction new, less deprec.
51	Office Furnishings:				
	1 Flat top Qr. Sawed Oak Desk (50" x 66")	50.00			
	1 " " " " " " (34" x 60")	57.50			
	1 " " " " " " (48" x 60")	40.00			
	1 54" Golden Oak roll top desk	30.00			
	1 42" Roll top desk	20.00			
	1 60" " " " (old)	30.00			
	2 Monarch Typewriters, No. 3	200.00			
	1 36 drawer Globe filing cabinet, roll front	75.00			
	1 4 drawer vertical letter file case	20.00			
	1 2 drawer document file with top	7.50			
	1 Burroughs (9 bank) Adding Mach	325.00			
	2 Iron Safes	500.00			
	Window shades, screen & awnings; Balance of office equipment, as per list	624.15	....	(5%)	....
			2,099	105	1,994
1240	Totals, Item 51		$2,099		$1,994
52.	Materials & Supplies:				
	At Ada Pumping Station:				
	Cast Iron Pipe and fittings as per list		216	....	216
	Flues, wrought pipe, turn buckles and pulleys		40	....	40
	528 concrete blocks (8 x 10 x 24) @ 21¢	110.88			

92 " " (8 x 10 x 12) @ 11¢	10.12			
5.0 M tile shingles @ 23	115.00			
		236	236	....
(Left over from construction of station and considered as of no present use.)				
Valves (as per list)		49	....	49
Tools as per list		196	20	176
100 tons coal		130	....	130
At Shop:				
Lead and brass goods and fittings		225	....	225
Tools and equipment (Deprec. 20%)		780	156	624
Meters in stock		821	....	821
At Pipe Yard:				
42.43 Tons 6"—10" C. I. Pipe @ 26.50	1,124.40			
2.17 " 4" " " @ 28.00	60.76			
4.86 " 3" " " @ 30.50	148.23			
25,400 Lbs. C. I. Fittings @ 2.8¢	711.20			
	2,044.59	2,045	....	2,045
Valves, pat. plugs & 1 hydrant		400	....	400
Miscellaneous items (tile pipe, paving brick, etc.)		300	....	300
Tools and equipment		35	....	35
Lumber		200	....	200
Totals, Item 52		$5,673		$5,261

Detailed Schedule of Values.—Continued.

Item No.	Description.	Cost of reproduction new.	Depreciation.	Cost of reproduction new, less deprec.
53.	Engineering & Superintendence:			
	5% of Items 20-51 inclusive, aggregating $294,315 and $272,414	14,716		13,621
	Totals, Item 53	$14,716		$13,621
	Totals, Items 1-53 incl.	$359,379		$331,371
54.	General Administrative and Legal Expense:			
	1½% of Items 1 to 53 inclusive, based on cost of Reproduction New only, no depreciation	$5,391	....	$5,391
	General Contingent Costs:			
55.	2% of Items 20 to 51 inclusive	5,886	....	5,448
	Totals, Items 1 to 55, incl.	$370,656		$342,210
56.	Interest During Construction:			
	5% of Items 1 to 55 inclusive	18,533	....	17,110
	Totals, Items 1 to 56, incl.	$389,189		$359,320
57.	Going Value (Development of Business)	16,302	....	16,302
58.	Operating Capital	7,500	....	7,500
	Grand Totals	$412,991		$383,122

1242 Notes on Going Value.

The conditions at Bluefield in respect to the provision of individual private water supplies appears to be such as to warrant the assumption of an unusually rapid development of business after the construction of the property, or, in other words, an unusually short period for the recovery of the business. The history of the company relative to the number of service connections (consumers or water takers) when compared with the population, indicates quite strongly that the people of Bluefield have depended to an unusual degree upon the public water system for their requirements of water.

It is assumed that the property and business of the company, if it were not already in existence, could be constructed and developed in not to exceed four years and probably in somewhat less time. It requires a stretch of the imagination, however, to consider the city of Bluefield, where water is difficult to secure individually and privately, as reaching a population of 14,500, as stated in the inventory for January 1, 1915, without a public water supply system. Were such the actual situation the people would necessarily have water supplies of some kind or kinds, since water is one of the absolute necessities. It might be that they would be depending upon rain water or upon delivery of water in bottles or barrels or upon such as could be carried from community wells or upon a combination of the sources. Wells at Bluefield are understood to be expensive and of small capacity, as well as being subject to contamination of their waters through fissures in the rock formations. Under such circumstances it would not be difficult to secure their patronage of a public supply furnished through pipe lines from moun-
1243 tain springs.

It is assumed that the construction of the property and business would take place about as follows: During the first year (1915) the organization would be formed, the preliminary investigations and negotiations made, some of the lands purchased, plans and specifications prepared and contracts made with different parties by about the middle of the year for the construction of several of the principal features of the property. During the latter half of the year the development of 3 or 4 of the gravity springs, the laying of about ten miles of mains, including the delivery line from the first developed springs to the Bland Street tank, and the erection of that tank could be readily accomplished placing the company in position to begin supplying water to some of the consumers along those pipe lines by the end of 1915. Revenue is estimated to be earned from 250 consumers from the beginning of the year 1916, during the time the remainder of the pipe lines and other property were being constructed. During 1915 also, a start would be made on the construction of the Ada pumping station, and contractors for machinery, boilers, twin tanks and other features would be executing the shop work on these items at their respective shops.

During the year 1916, and probably by mid-autumn, the construction work would be entirely completed, and additional con-

sumers taken on throughout the year as the laying of mains progressed. The entire group of gravity springs and the Beaver Pond spring and pumping station with its delivery line could readily be completed by the middle of the year, placing the company in position to meet the requirements of fully half the whole number of consumers by that time. During the year 1916 the number of consumers connected and served is estimated to increase fairly
1244 uniformly from 250 at the beginning to 1,000 at the end of the year. This obviously means the creation of a large amount of house plum-ing to be done during the year, for it cannot be assumed that the houses would be piped for water service before such service was available. This would attract contractors in that line of work from other places. It is assumed that such contractors could bring in enough help to accomplish the work involved in preparing consumers' premises for water service at the rate of demand, such demand not exceeding the rate at which the water company could prepare to furnish the service to them.

During the year 1916 the earnings from partial operation would consist of the revenues from 250 average consumers for the full year and from the remainder (750 consumers) for one-half of the year. A study of the company's earnings from metered and fixture rate service, excluding hydrant service earnings for the present, (table 1), on a per capita basis, with population as indicated on the diagram, Figure 4, gives the following results:

Calendar years.	Total earnings.	Population (mid-year).	Commercial service earnings per capita.
1905	18,323.50	7,600	$2.41
1906	.....	.....	.....
1907	.....	.....	.....
1908	24,626.46	9,700	2.54
1909	24,004.66	10,433	2.30
1910	29,983.48	11,166	2.68
1911	34,152.99	11,900	2.87
1912	32,126.52	12,633	2.54
1913	34,361.91	13,366	2.57
1914	36,659.38	14,100	2.60

Excluding hydrant rentals.

1245 Using an average of 6.5 inhabitants per service and an average revenue of $2.50 per capita gives a yearly revenue of $16.25 per service. On this basis the earnings for 1916 from 250 consumers for the whole year and from 750 for one-half year would amount to $10,156.25. Operating expenses and taxes during the year of partial operation, 1916, are estimated at $4,000.00, leaving a net earning of $6,156.00 from commercial service. Hydrant rentals earned during the year would increase this amount by fully $1,500.00.

During 1917 the number of consumers connected and served is estimated to increase from 1,000 at the beginning to 1,750 at the

end of the year, and the revenues, figured as above, are estimated at $28,437.50 for commercial service and the full amount of the 1914 revenues ($3,142.50) for hydrant service, or a total of $31,000.

During 1918 it is estimated that the balance of the whole amount of the business which the company had on January 1, 1915, would be acquired after which the full amount of earnings which should come from that business would be had. The earnings for 1918, figured in the same way as for 1916 and 1917, amount to $36,460 and the expenses of operation and maintenance and taxes, $19,400.

The consideration of going value as the cost of developing business, in the sense of deficits of earnings below the annual sums of operating and maintenance expenses, taxes, depreciation and proper net return, requires the fixing of a proper net return as well as the amounts of probable earnings and the expenses other than net return upon capital.

1246 Proper net return cannot be less than the current rates of interest on long time loans having a similar degree of security. If it be no more than such rate there is no compensation to the company, as the funds invested are quite generally obtained, to a large extent at least, from the sale of mortgage bonds. The determination of the cost of carrying the bonds must take into consideration both the stipulated rate of interest and the price at which the bonds can be sold. The latter will depend upon the security afforded and upon other factors. This will seldom result in an actual cost of materially less than 6%, and frequently somewhat more than that rate. "The cost of capital and the enterpriser are fixed by economic forces, or laws in the open market, which cannot be controlled by the state, the city, or the Commission * * *." (In re Investigation, Ashland Water Company, 14 W. R. C. R. 723.)

The use of a six per cent rate of return in estimating the cost of developing the business, i. e., the amount of the going value, will give one result, and a larger rate will give a larger result. A rate of six per cent is here used and considered as a minimum from the standpoint of yielding any compensation whatever to the company over and above the cost of borrowed funds. One per cent is also allowed for depreciation, which is probably somewhat liberal for this element of expense.

It has hereinbefore been shown that the estimated cost of reproduction, new, of the physical property, (assumed to be completed at the end of 1916,) is $389,169.00 and the cost new less depreciation is $359,320.00, both these values being inclusive of interest during construction, but exclusive of going value and operating capital.

1247 If the plant, as represented by the above estimated cost of reproduction, be charged, or debited, with the expense of partial operation during 1916 and credited with its gross earnings, and in each of the two succeeding years be charged with expenses of operation, maintenance, depreciation and interest on the preceding year's net debit and credited with earnings of the same year, the result will be the total cost of plant and business development. Deducting from this the cost of the physical plant leaves a sum which may be considered as the cost of developing the business or the amount of going value.

In considering this feature of the property there is involved the debatable question as to whether the earnings shall be estimated upon the basis of the same rates now and heretofore actually in effect or upon some other schedule of that now existing should be found to be inequitable. For the present it is assumed that the existing rates, earnings and expenses are properly to be taken as a guide in determining the going value of the plant.

In the present case there is a rather unusual degree of irregularity or variation of both operating expenses per annum (including maintenance and taxes) and annual income during the period covered by Table 1. For this reason it is difficult to determine with much accuracy just what are to be regarded as normal expenses and income without more thorough analyses of the operating records than has heretofore been made by the writer. Both the income and expenses (operation, maintenance and taxes) of the calendar year 1914 appear to be fairly in line with the general average of the corresponding figures of the nine preceding years, and in the light of present information are here considered fairly acceptable, at least for the determination of the going value. It is assumed that the prop-
1248 erty if constructed and developed after January 1, 1915, in accordance with the theory of valuation be estimating cost of reproduction less depreciation, would show the same income and expenses after four years as the existing plant showed in 1914.

The going value determination appears as follows:

Reproduction of physical plant, completed by Jan. 1, 1917. Items 1 to 56 inclusive		$389,189
Year 1916: Plant debited with operating exp.	$4,000	
" credited " earnings	7,656	
Net credit		3,656
		$385,533
Year 1917: Plant debited with interest 6%	23,132	
Depreciation 1%	3,855	
Operating Exp.	14,000	
	40,987	
" credited with earnings	31,580	
Net debit		9,407
Total cost to Jan. 1, 1918		$394,940

Year 1918: Debits—6% Interest		23,696	
	Depreciation	3,855	
	Expenses	19,400	
		46,951	
Credits: Earnings		36,400	
	Net debit		10,551
	Total cost to Jan. 1, 1919		405,491
	Cost of Physical Plant only		389,189
	Cost of Business Development		$16,302

TABLE 1.

Water Works Operating Statistics.

Calendar Years	1905.	1906.	1907.	1908.	1909.	1910.	1911	1912.	1913.	1914.
Gross Income	18,803.50	22,836.11	31,163.97	25,841.46	25,361.66	31,483.48	35,727.99	33,766.52	36,031.91	39,801.88
Fixture Rates	14,241.13	.....	.....	15,905.96	8,540.71	9,326.72	10,973.13	12,013.37	7,889.32	8,167.08
Meter Service	4,082.37	.....	.....	8,720.50	15,463.95	20,656.76	23,179.86	20,103.15	26,492.59	28,492.30
Public Hydrants	480.00	671.62	850.00	1,215.00	1,357.50	1,500.00	1,575.00	1,650.00	1,650.00	3,142.50
Total Income ...	18,803.50	22,836.11	31,163.97	25,841.46	25,361.66	31,483.48	35,727.99	33,766.52	36,031.91	39,801.88
Gross Cost of Operation & Maintenance	9,450.95	11,449.52	14,823.13	9,320.99	9,175.67	15,153.42	13,474.49	15,086.21	12,819.87	17,524.78
Total Cost Excl. taxes, Dep. & Fix. Chgs.....	9,450.95	11,449.52	14,823.13	9,320.99	9,175.67	15,153.42	13,474.49	15,086.21	12,819.87	17,524.78
Add taxes.....	1,357.34	1,337.21	1,255.90	1,726.40	2,369.03	1,994.15	2,085.23	2,069.18	2,203.53	2,448.57
Total Cost Excl. taxes, Dep. & Fix. Chgs.....	10,808.79	12,786.73	16,079.03	11,047.39	11,544.70	17,147.57	15,559.82	17,555.39	15,022.40	19,973.35
Add. Depreciation ...	47.20	None chd.	39.58	9,076.36	6,859.99	6,617.84	6,243.00	4,317.29	8,141.42	4,557.87
Total Cost Excl. fixed Charges..	10,855.99	12,783.73	16,118.61	20,123.75	18,404.69	23,765.41	21,802.82	21,472.68	23,163.82	24,531.22

Add. fixed chgs.....	6,273.90	1,411.37	2,941.38	2,803.11	4,091.17	3,944.55	4,515.10	3,434.53	7,841.39	6,060.02
Total Cost of Oper. Maint. Taxes, Dep. & Fix. Charges...	17,129.89	14,195.10	19,050.99	22,926.86	22,495.86	27,709.96	26,317.92	24,907.21	31,005.31	30,591.24
Net Income Excl. Taxes, Dep. & Fix. Chgs.	9,352.55	11,386.59	16,340.84	16,520.47	16,185.99	16,330.06	22,253.50	18,680.31	23,212.04	22,277.10
Excl. Dep. & fixed Charges	7,994.71	10,049.38	15,084.94	14,794.07	13,816.96	14,335.91	20,186.17	16,611.13	21,009.51	19,828.53
Excl. Fix. Chgs.....	7,947.51	10,049.38	15,045.36	5,717.71	6,956.97	7,718.07	13,925.17	12,203.84	12,868.09	15,270.66
Net Income Applic. to Div. & Res.....	1,673.61	8,638.01	12,103.98	2,914.60	2,865.80	3,773.32	9,410.07	8,859.31	5,026.70	9,210.64

4447.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY, Petitioner,

vs.

PUBLIC SERVICE COMMISSION, Respondent.

1250 APPENDIX A.

Apportionment of Property Between Public & Private Service.

In common with nearly all other water supply plants in this country the Bluefield Water Works furnishes two primarily different and distinct classes of service. These are: (*a*) Municipal hydrant service, for fire fighting, sewer flushing and the like, which may not be needed very often, but when needed it may require large volumes of water (without regard to the sanitary quality of it) in a single small area, this to be almost instantly available at any time; (*b*) Private, i. e., commercial, or domestic and industrial, service, which requires water of good quality, suitable for drinking and for general household use, furnished in comparatively small quantities per unit of time with considerable regularity and in all parts of the system.

Some water supply plants have been built for one or the other of these classes of service only, but such plants are quite few.

In considering the question of proper rates for a plant furnishing both classes it is believed to be logical and equitable to charge either class with that proportion of those expenses which are related to the property value, or capital, which the cost of a plant for that class of service alone would bear to the sum of the costs of two separate plants, one designed for the public and the other for the private service.

The items of net return (on property value), depreciation and taxes are the expenses which should be divided between public and private service in accordance with such proportions or ratios.

1251 In making such apportionments it is of primary importance to consider the relative magnitudes of the water supplies required by the two classes of service. It is stated in the inventory (p. 3) that the average daily consumption amounts to 870,000 gallons. This is equivalent to a uniform rate of 604 gallons per minute. The rate at which water is actually used is not uniform, but varies between rather wide limits. Independent of the actual use of water from fire hydrants the rates of consumption will vary from considerably less than the average during several hours of a day to more than double the yearly average during occasional hours of occasional days. Experience shows that 225%

of the yearly average may be taken as a fair rate of frequently recurring maximum demand for private service where there is no continuous and reliable record to indicate that some other ratio is more equitable for a given case. Using this ration on the yearly average of 604 gallons per minute for Bluefield gives a maximum of 1,360 gallons per minute.

The average daily consumption as stated in the inventory (870,000 gallons) doubtless includes the water used through fire hydrants, of which there is no measurement. The proportion so used and included above is unlikely to be as much as 5% of the total, possibly only two or three per cent. Making some allowance for the hydrant service, not over 5%, leaves at least 95% of 870,000 (826,500 gallons or more) as the average daily use and waste of water in private service. Applying the same ratio as above (for relation of maximum to average) gives a corrected maximum of approximately 1,300 gallons per minute or more for the private service alone.

Adequate fire protection service for Bluefield would require that about twice the above quantity per minute, say 10 streams at
1252 250 gallons per minute, should be available about any one of several blocks wherein building values and fire risks are greatest. Obviously, fire service requires distributing mains of greater capacity and cost than does the other class, and must be charged with more than half of the value of the distributing pipe lines rendering combined service in the city.

The storage of a large quantity of water on high elevations in the city for either public or private service renders the situation somewhat different as regards the proportion of property value outside the city which is chargeable to either. The infrequency of use of water through fire hydrants and the comparatively small aggregate quantity so used would, with adequate storage of water in the city, require comparatively small facilities for delivering a fire hydrant supply to the storage tanks. It does not appear feasible, however, to designate any particular spring tracts or other outlying features whose values can be said to be chargeable to one class of service or the other, for the two have equal claims on the more advantageously situated water supplies.

In reference to the springs and other outlying features of this property it is seemingly impossible to follow out the idea closely estimating the relative costs of separate public and private service plants without encountering the conflict of claims upon the more favorably situated of these small supplies. Certain assumptions lead to the fixing of certain limits between which the fair and reasonable proportions of values of outlying property belonging to public or to private service must fall.

The following table presents the estimates of the public and private service proportions of each item of the valuation and
1253 of their total, showing that the municipal hydrant service is considered as chargeable with 27.2% of the total depreciation, taxes and net return. Direct operating expenses are apportioned in accordance with a very similar principle, but upon a different set of ratios.

Tabulation of Values of Property Items and Proportions of Each Considered as Chargeable to Public and to Private Service on the Basis of Relative Costs of Independent Systems or Plants.

Item No.	Designation.	Values of items.	%	Hydrant service, amount.	%	Private service, amount.
1.	Preliminary Costs	$1,000	50	$500	50	$500
2.	Real Estate & Rights of Way	44,238	10	4,424	90	39,814
3.	Gravity Springs	9,142	15	1,371	85	7,771
4.	Ada Springs	13,027	15	1,954	85	11,073
5.	Jarrell Spring	.....	..	.....	..	.....
6.	Beaver Pond Spring	97	15	15	85	82
7.	Reservoir & Dam	.....	..	.....	..	.....
8.	Pipe Line, Gr. Spgs. to City	15,442	15	2,316	85	13,126
9.	" " Ada " " "	47,714	15	7,157	85	40,557
10.	" " Beaver Pond to City	3,478	15	522	85	2,956
11.	Ada Pumping Station	11,593	15	1,739	85	9,854
12.	Steel Stack	2,153	15	323	85	1,830
13.	Coal Chute	551	15	83	85	468
14.	Oil House	111	15	17	85	94
15.	Worthington Pump	873	15	131	85	742
16.	Snow Pump	18,300	15	2,745	85	15,555
17.	Auxiliaries	822	15	123	85	699
18.	Boiler Plant	3,680	15	552	85	3,128
19.	Piping in Station	1,018	15	153	85	865
20.	Piping in Yard	1,132	15	170	85	962
21.	Concrete Retaining Wall	1,068	15	160	85	908
22.	Station Yard Improvements	1,091	15	164	85	927
23.	Station Miscellaneous	475	15	71	85	404
24.	Beaver Pond Pumping Station	61	15	9	85	52

Tabulation of Values of Property Items.—Continued.

Item No.	Designation.	Values of items.	%	Hydrant service, amount.	%	Private service, amount.
25.	Steel Stack & Breeching	19	15	3	85	16
26.	Worthington Pump	323	15	48	85	275
27.	Feed Water Heater	64	15	10	85	54
28.	Boiler Plant	302	15	45	85	257
29.	Piping in Station	198	15	30	85	168
30.	Intake Line to P. Station	163	15	24	85	139
31.	Station Miscellaneous	6	50	3	50	3
32.	Cast Iron Street Mains	42,672	65	27,737	35	14,935
33.	Cast Iron Specials	1,669	65	1,085	35	584
34.	Laying C. I. Mains	15,212	65	9,888	35	5,324
35.	Galv. Iron Mains	3,784	..	.....	100	3,784
36.	Laying Galv. Mains	2,710	..	.....	100	2,710
1255						
37.	Extras for Difficult Laying	5,566	50	2,783	50	2,783
38.	Steam Railroad Crossings	1,297	50	648	50	649
39.	Street Railroad Crossings	23	50	12	50	11
40.	Pavements over Mains	233	50	116	50	117
41.	Valves on Mains	2,922	65	1,899	35	1,023
42.	Valve Boxes and Vaults	417	65	271	35	146
43.	Fire Hydrants	367	100	367	..	.....
44.	Services and Fittings	2,174	..	.....	100	2,174
45.	Meters in Service	11,743	..	.....	100	11,743
46.	Meter Boxes and Vaults	5,509	..	.....	100	5,509

47. Twin Tanks	29,210	50	14,605	50	14,605
48. Bland St. Tank	6,211	50	3,106	50	3,105
49. Elec. Transmission Line	330	100	330	..	.....
50. Laboratory Equipment	305	..	.....	100	305
51. Office Furnishings	1,994	10	199	90	1,795
52. Materials and Supplies	5,261	50	2,630	50	2,631
53. Engineering and Superintendence	13,621	..	4,175	..	9,446
54. Admin. & Legal	5,391	28	1,509	72	3,882
55. General Contingent Costs	5,448	..	1,670	..	3,778
56. Interest	17,110	..	4,890	..	12,220
57. Going Concern Value	16,302	..	.....	100	16,302
58. Operating Capital	7,500	⅓	2,500	⅔	5,000
	383,122	27.5	165,287	72.5	277,835

Cost of Reproduction New Less Depreciation.

Privately Owned Utilities.

	Population (1910).	Former hydrant rentals.	Hyd. rent as fixed by Comm.
City of Ashland vs. Ashland Water Co., 1909, 4 W. R. C. R. 273-310.	11,594	14,960.00	$23,340.00
City of Ripon vs. Ripon Lt. & W. Co., 1910, 5 W. R. C. R. 1-94. (102 hydts.)	3,739	4,940.50	6,082.00
City of Beloit vs. Beloit W. G. & El. Co., 1911, 7 W. R. C. R. 187-387. (181 hydts.)	15,125	10,524.48	15,000.00
In re Application Oconto City Water Supply Co., 1911, 7 W. R. C. R. 497-578. (123 hydts.)	5,629	7,600.00	9,800.00
City of Janesville vs. Janesville Water Co., 1911, 7 W. R. C. R. 628-708. (306 hydts.)	13,894	7,298.00	15,800.00
City of Marinette vs. City Water Co., 1911, 8 W. R. C. R. 334-387.	14,610	9,170.00	14,800.00
Civic League et al. vs. Beaver Dam W. Co., 1912, 10 W. R. C. R. 661-691	6,758	6,939.69	8,500.00
City of Green Bay vs. Green Bay Water Co., 1913, 11 W. R. C. R. 236-264	25,236	16,687.50	24,000.00
In re Investigation on motion of the Comm. of the Rates, Rules and Regulations of the Ashland Water Company, 1914, 14 W. R. C. R. 1-76	11,594	15,110.00	24,300.00
In re Investigation on Motion of the Comm. of the Rates, Rules and Regulations of the Ashland Water Co., rehearing, 1914, 14 W. R. C. R. 721-742	11,594	24,300.00	21,000.00
Town of Vaughn vs. Hurley Water Co., 1914, 14 W. R. C. R. 291-314	2,449	4,400.00	2,800.00

Entire Town of Vaughn—unincorporated Village of Hurley has population estimated at about 1,800.

1257 *Hydrant Rentals or Fire Protection Service Charges Established by Railroad Commission of Wisconsin in Water-rate Cases Involving Cities and Villages of Various Sizes.*

Municipal Plants.

	Population (1910).	Former hydrant rentals.	Hyd. rent as fixed by Comm.
In re Application Jefferson Municipal Elec. Lt. & Water Plant, 1910. 5 W. R. C. R. 551-591. (54 hydts.)	2,582	000	$2,560.00
Dick et al., vs. Madison Water Comm. 1910. 5 W. R. C. R. 731-791. (319 hydts.)	25,531	$11,675.00	28,906.96
Kirwin et al. vs. City of Darlington 1910, 6 W. R. C. R. 26-43. (33 hydts.)	1,808	000	1,155.00
Fitzgerald et al. vs. City of Tomahawk, 1911, 8 W. R. C. R. 40-57	2,907	1,025.00	2,539.66
West et. al. vs. City of Eau Claire, 1912, 9 W. R. C. R. 134-155	18,310	21 000.00	15,000.00
In re Application City of Neenah for a revision of its water rates, 1912, 11 W. R. C. R. 119-129	5,734	4,700.00	5,850.00
In re Investigation on motion of the commission of the Rates, Rules and Regulations of the Evansville Elec. Light & Water Works Plant, 1912, 11 W. R. C. R. 197-215	2,061	2,000.00	2,500.00
Rollins et al. vs. Village of Montfort, 1913, 11 W. R. C. R. 278-292	558	.....	437.00
In re Application Village of Elkhart Lake, 1913, 11 W. R. C. R. 690-696	499	165.00	600.00

Hydrant Rentals or Fire Protection Service Charges.—Continued.

	Population (1910).	Former hydrant rentals.	Hyd. rent as fixed by Comm.
Kittleson et al. vs. Elroy Mun. W. & Lt. Plant, 1914, 14 W. R. C. R. 485-498	1,729	.....	1,500.00
Dennett et al. vs. City of Sheboygan, 1914, 14 W. R. C. R. 634-654.	26,398	14,073.80	27,500.00
C. T. Hughes et. al. vs. Watertown Water Works, 1914, 14 W. R. C. R. 669-689	8,829	.....	8,465.20
For fire protection and all other public services.			
1258			
In re Investigation, on motion of the Commission, of the Rates, Service, Management and Accounting of the Munic. W. Wks. & Elec. Ltg. Plant in the Village of Waterloo, Wis., 1914 15 W. R. C. R. 534-551	1,220	1,000.00	1,500.00

1259 Bluefield Water Works and Improvement Company.

Adopted October 3rd, 1892.

Whereas, the Council of the Town of Bluefield at a meeting thereof, held on the 20th day of January, 1891, passed the following ordinance:

Upon the application of the Bluefield Water Works and Improvement Company, represented by L C. Tabb, the following was read and adopted:

Whereas, the said Bluefield Water Works and Improvement Company, a corporation doing business in Mercer County, West Virginia, and now owner of the water works in the City of Bluefield, is desirous to obtain the privilege of maintaining the said water works, and of constructing and maintaining, transporting and furnishing water for the use of the said City of Bluefield and the citizens thereof and the owners of property therein, for domestic and manufacturing, and for all other uses and purposes for which it is desirable, for rent, lease, hire, sale and reward.

And Whereas, the Council of the said City of Bluefield deems it desirable and important to the said City of Bluefield and the inhabitants thereof that the construction and maintenance of water works for the purpose aforesaid should be provided for, encouraged and facilitated; Therefore,

Be it ordained by the Council of the City of Bluefield that the said Bluefield Water Works and Improvement Company, its successors and assigns have the right to construct and forever maintain their said water works, pipes and mains through, beneath, over, across and along any and all of the streets, alleys and public rounds of the said City of Bluefield for the purpose of maintaining, supplying and furnishing water to the said City of Bluefield and the citizens and property holders thereof for domestic and manufacturing purposes and for all other purposes for which it is desirable. for rent, lease, hire, sale and reward, upon any terms and conditions that, from time to time may be agreed upon by and between the said Bluefield Water Works and Improvement Company, its successors and assigns and the said City of Bluefield and other patrons and customers of the said Bluefield Water Works and Improvement Company and its successors and assigns.

And be it further ordained by the Council of the City of Bluefield, that the aforesaid rights and privileges shall extend to all public grounds, streets and alleys hereafter acquired and established by the said City of Bluefield, as well as those now in existence, owned and established by the said City of Bluefield.

And whereas, it is suggested that said ordinance does not secure to the general public as fully as it should the right to have and demand water from said Bluefield Water Works and Improvement Company to the extent of its ability to furnish same, at fair and reasonable prices.

On motion—

It is ordered and ordained,

First. That the said Bluefield Water Works and Improvement Company shall at all times furnish this Town, the general public, persons and corporations with water, to the extent of said Company's ability to furnish same, and at prices to be agreed on by said Company and the purchasers of water from said Company; the maximum charges to be made by said Company for water shall not exceed present rates for private consumers and twenty five cents per 1,000 gallons for consumers by meter.

Second. That the general public shall, at all times, have the right to have and demand from said Bluefield Water Works and Improvement Company water for all proper and legitimate uses to the extent of the ability of said Company to furnish same, on the terms hereinbefore prescribed.

1260 Third. The said Bluefield Water Works and Improvement Company shall conduct its business of supplying the public with water in accordance with the ordinances of this Town, heretofore or to be hereafter enacted as long as said Company operates its said business under the authority conferred on it by the ordinances of this Town, except that the maximum price to be charged for water, as fixed by this ordinance, shall not be changed without the consent of said Company.

Fourth. That the powers heretofore conferred upon said Bluefield Water Works and Improvement Company as shown by the ordinance heretofore enacted and incorporated herein, is hereby approved and confirmed.

The said Bluefield Water Works and Improvement Company, by L. C. Tabb, its agent, hereby consents to this ordinance and said Company agrees to conduct its said business in accordance therewith, so long as it conducts its said business under the authority of this Town.

1260½ Bluefield Water Works and Improvement Company.

Report Made to the Public Service Commission by H. E. Neas, Assistant Secretary & Statistician.

Filed January 20th, 1917.

1261 Bluefield Water Works and Improvement Company.

The Bluefield Water Works and Improvement Company was incorporated under the laws of West Virginia, July 25, 1890, "for the purpose of erecting and running water works, acquiring springs, water rights, and privileges and supplying persons and corporations with water; building and leasing or otherwise disposing of houses, erecting one or more hotels, with full power and authority to acquire and hold such lands and property, rights and interests as may be useful or necessary for any of the purposes, and to sell, grant, mortgage and otherwise dispose of the same."

The company acquired the properties located at Bluefield, West Virginia, of the Virginia Land Company and the Virginia Investment Association, an allied company.

The initial development of a portion of the properties, including the water works, acquired from the Virginia Land Company was begun early in the year 1890, by the Virginia Company, (not the Virginia Land Company) a subsidiary company (land holding) of the Norfolk and Western Railway Company. Soon thereafter the Virginia Company disposed of its holdings, including the water works plant, to the Second Virginia Syndicate, the predecessor of the Virginia Land Company.

To December 31, 1890, $252,000.00 of the capital stock of the company (Bluefield Water Works and Improvement Company) had been issued, $194,000.00 of which was held by the Virginia Land Company (formerly the Second Virginia Syndicate), and $58,000.00 by the Virginia Investment Association.

The stock issued to the Virginia Land Company, was in exchange for the following cash and properties:

Land at Bluefield:	
"Being for 230 acres at Bluefield, bought of Virginia Company @ $300.00 per acre" by Second Virginia Syndicate	$69,000.00
Houses at Bluefield:	
"Being for 15 houses at Bluefield, bought of Virginia Company at cost" by Second Virginia Syndicate	28,500.00
1262 Water Works at Bluefield—Plant:	
"Being for Water Works Plant at Bluefield, bought of Virginia Company at cost" by Second Virginia Syndicate	$14,282.10
Lots on Princeton Avenue	13,330.00
Water Works at Bluefield—Springs:	
Being for "4 Springs bought of Baileys"	3,600.00
Cash	65,287.90
Total	$194,000.00

The stock held by the Virginia Investment Association was issued for properties, as follows:

Land at Bluefield:	
"Being for total cost of Davidson Tract 144 acres $36,000.00 and 22 lots in old Bluefield $16,000.00"	$52,000.00

Houses at Bluefield:		
Being for "4 houses built in 1889"		6,000.00
Total		$58,000.00

The Balance Sheet of the company as of December 31, 1890, confirming the above transactions, is as follows:

	Dr.	
Land at Bluefield	$147,473.28	
Houses at Bluefield	24,110.74	
Water Works at Bluefield	27,663.87	
Cash	62,732.41	
N. & W. R. R. Co.	1,200.68	
W. A. Cather & Bro.	1,000.00	
Bills Receivable	37,206.17	
		$291,387.15
	Cr.	
Capital Stock	$252,000.00	
Bills Payable	26,346.15	
Profit and Loss	499.00	
Improvement Fund	6,271.00	
Contingent Fund	6,271.00	
		$291,387.15

From the organization of the company to December 31, 1907, there was but one yearly Balance Sheet and one Profit and Loss account covering the entire properties and business of the company. The Balance Sheets and Profit and Loss statements covering this period are filed herewith, marked "Exhibit A—Balance Sheets 1890-1907" and "Exhibit B—Profit and Loss 1890-1907".

"Exhibit B—Profit and Loss 1890-1907", shows a surplus balance at the end of this period (December 31, 1907) of $254,274.15.

Dividends amounting to $60,480.00 were paid, making the
1263 total net profit for the period, $314,754.15. This was an average of $18,514.95 per year or 7.35% on the Capital Stock of $252,000.00. A depreciation charge amounting to $32,802.09 covering depreciation of the Water Works was also carried into the account. This added to $314,754.15 made the gross profit $347,556.24 or an average of $20,444.48 per year. This is the equivalent of a yield of 8.14% on the capital stock.

At a special meeting of the Board of Directors of the company held February 4, 1908 "to consider the advisability of separating the Land Account from the Water Works Plant", the President recommended "that the approval of the Virginia Land Company and The Virginia Investment Association, who are the owners of all of the capital stock of the Bluefield Water Works and Improvement Company, be asked to transfer all of the real estate not used in the operation of the Water Works, together with all accounts

receivable and payable and cash arising from the sale of such real estate to such persons as they may designate".

The Recommendation was adopted and in pursuance thereof the said separation was made as of December 31st, 1907.

"Exhibit C—Balance Sheets 1908-1915" shows separate yearly balance sheets for both the Land Department and the Water Works, for the period beginning January 1, 1908 and ending December 31, 1915.

"Exhibit D—Profit and Loss 1908-1915" shows separate Profit and Loss statements for both the Land Department and the Water Works, for the same period as Exhibit C.

"Exhibit D—Profit and Loss 1908-1915" shows a credit balance, December 31, 1915, of $7,657.98 in the Land Department account and a surplus balance of $22,790.12 in the Water Works account, a net total of $15,132.14. Dividends paid during this period and charged to the Water Works account, amounting to $32,760.00 added to the above total makes net profits for the period of $47,892.14. Depreciation amounting to $50,653.10 was also charged into the account of the Water Works during this period. This amount added to $47,892.14 makes the total gross profit for the period, $98,545.24, or an average of $12,318.15 per year.

1264 Total profits covering the entire life of both the Land Department and Water Works, to December 31, 1915, are as follows:

Profit and Loss balance—Dec. 31, 1915	$269,406.29
Plus Dividends paid	93,240.00
Total Net Profits	$362,646.29
Plus Depreciation Charges	83,455.19
Total Gross Profits	$446,101.48

The capital stock was increased from $252,000.00 to $312,000.00 beginning with 1913. For this reason, the average rate of return running through the whole life of the company is not shown. The period ending December 31, 1912, being fairly indicative, will be used for this purpose:

Net Profit to December 31, 1912	$368,230.00
Average Net Profit, yearly	16,510.46
Rate of Return on Capital Stock	6.55%
Total Gross Profit (before deducting depreciation)	$433,808.16
Average Gross Profit for year	19,791.85
Rate of Return on Capital Stock	7.85%

The correctness of the above showing of profits depends entirely upon whether or not the valuations, carried in the Balance Sheets are the true values of the properties. If the properties actually have greater or less present values the profits are correspondingly greater or less than shown here.

In the December 31, 1915 Balance Sheet the Water Works properties are carried at $324,427.38 and the properties in the Land Department at $88,410.66. "Exhibit E—Real Estate", filed herewith shows, the real estate owned on or about this date and the price at which it was offered for sale. The total sales price or value as shown thereby is $179,817.00. The assessed value as of April 1, 1916, was $95,262.00. The actual value was probably somewhere between the two figures. If the mean between the two, $138,000.00, be adopted the properties had a value $50,000.00, in round numbers, in excess of the value carried in the Balance Sheet. If it be assumed that the Water Works has a valuation of $324,427.38, as carried in the Balance Sheet, and the property in the Land Department a value of $138,000.00, the total net profit, as of December 31, 1915, is approximately $418,000.00 and the total gross profit $484,000.00, an average rate of return per year of 7½% in the first instance and 8¾% in the second.

1265 The Water Works Utility.

This part of the report deals exclusively with the Water Works Utility.

"Exhibit F—Water Works" shows the Gross Investment, Depreciation and Net Investment of the Water Works Utility, by years, for the entire life of the plant, to December 31, 1915.

As indicated by the exhibit, the total gross investment, to December 31, 1915, was $407,882.47; the total depreciation $83,455.19 and the total net investment $324,427.38. This covers the water works plant, office furniture and fixtures, tools, material and supplies, surveying instruments, laboratory outfit, etc., etc.

"Exhibit G—Water Works" shows in detail the Revenues and Expenses of the Water Works Utility, by years, for the entire life of the plant to December 31, 1915.

The following figures taken from Exhibit G show, for each year, the gross revenues, operating expenses and taxes, and net revenues after deducting operating expenses and taxes.

	Gross revenues.	Operating expenses and taxes.	Gross revenues, less operating exp. and taxes.
1890	$3,127.84	$651.42	$2,476.42
1891	7,888.16	728.30	7,159.86
1892	9,708.81	1,596.98	8,111.83
1893	11,124.04	3,331.63	7,792.41
1894	9,011.73	3,224.65	5,787.08
1895	7,169.19	5,223.57	1,945.62
1896	7,140.66	3,425.96	3,714.70
1897	7,650.95	3,887.58	4,763.37
1898	10,796.98	4,633.78	6,163.20
1899	10,678.12	6,641.78	5,036.34
1900	10,560.00	5,901.16	4,658.84
1901	15,121.67	8,298.67	6,823.00
1902	16,515.42	7,876.34	8,639.08
1903	20,087.29	15,394.49	4,692.80
1904	22,857.23	15,648.77	7,208.46
1905	18,803.50	17,864.89	938.61
1906	23,811.43	15,326.49	8,484.94
1907	31,163.97	20,259.99	10,903.98
1908	26,490.91	13,720.50	12,770.41
1909	27,065.42	16,354.87	10,710.55
1910	32,239.12	21,294.96	10,944.16
1911	35,976.24	19,307.39	16,668.85
1266			
1912	34,153.60	19,814.12	14,339.48
1913	36,217.27	20,013.10	16,204.17
1914	40,109.39	26,340.88	13,768.51
1915	43,866.77	26,313.35	17,553.42
Totals	$519,335.71	$301,075.62	$218,260.09

As indicated by this statement the total gross revenues for the entire life of the plant to December 31, 1915, were 519,335.71; the total operating expenses and taxes $301,075.62 and the total net revenue after deducting operating expenses and taxes, $218,260.09.

The next statement, made up from figures set out in Exhibits F and G, shows the total investment at the beginning of each year during the life of the plant, the operating revenues for each year after deducting operating expenses and taxes, and the rate of return on the capital actually invested.

	Total investment beginning of year.	Gross revenues, less operating exp. & taxes.	Rate of return on total investment.
1890	.....	$2,476.42	.....
1891	$27,663.87	7,159.86	25.8%
1892	38,833.39	8,111.83	20.8%
1893	65,319.88	7,792.41	11.9%
1894	67,460.70	5,787.08	8.5%
1895	68,382.55	1,945.62	2.8%
1896	72,770.71	3,714.70	5.1%
1897	72,924.72	4,763.37	6.5%
1898	74,249.38	6,163.20	8.3%
1899	75,842.20	5,036.34	6.6%
1900	77,802.71	4,658.84	5.9%
1901	94,942.54	6,823.00	7.1%
1902	132,830.20	8,639.08	6.5%
1903	137,354.03	4,692.80	3.4%
1904	143,720.65	7,208.46	5.0%
1905	155,253.49	938.61	0.6%
1906	159,486.08	8,484.94	5.3%
1907	197,439.29	10,903.98	5.5%
1908	272,802.09	12,770.41	4.6%
1909	300,729.90	10,710.55	3.5%
1910	311,882.04	10,944.16	3.5%
1911	318,057.99	16,668.85	5.2%
1912	329,276.96	14,339.48	4.3%
1913	361,415.89	16,204.17	4.4%
1914	377,242.63	13,768.51	3.6%
1915	393,076.05	17,553.42	4.4%
Average	$173,070.40	$8,730.40	5.0%
Average last 5 years	355,813.90	15,706.89	4.4%

1267 It will be noted that the average yearly investment running through the entire life of the plant was $173,070.40 and the average yearly net revenue $8,730.40, an average rate of return of 5%.

The statement shows also that the average yearly investment was $355,813.90, the average yearly net revenue $15,706.89, and the average rate of return 4.4% for the five year period ending with the year 1915. The rate of return for the year 1915 is also shown to be 4.4%.

It is apparent that the rate of return has not been ample for a water utility such as this. The question arises, therefore, as to what is a fair return, and this question brings up the proposition of the valuation upon which the rate of return should be based.

"Exhibit H—Water Works," filed herewith, shows that the amount expended for additions and betterments (the cost of the

plant) exceeded the net revenue from operation, approximately $192,000.00. In other words a plant costing $407,882.57 was built up by putting all of the net earnings from its operation into the plant, and the additional sum of $192,000.00. It has been shown above that the net earnings were the equivalent of an average yearly return of 5% on the average yearly gross investment. On this basis, if a net return of 5% were considered an ample rate of return, it follows that the proper valuation upon which the rate should be based would be the total cost of the plant or $407,882.57.

If the plant had returned to its owners 6% yearly on the gross investment the total investment including deficit would have been (1915) $449,228.05 or approximately $450,000.00.

If it be assumed that 6% is a fair rate of return and $450,000.00 is the proper valuation upon which the property should earn, the net revenue per year would have to be $27,000.00. The net revenue for 1915, a representative year as shown above, was only $17,553.42. It follows then that the net revenue would have to be increased $9,446.58. To permit this increase in the net revenue the gross income would have to be increased approximately 21½%.

1268 The statement following shows the sources of gross revenue for the year 1915:

Private Water Rents:		
Ordinary	$39,014.24	
Fire Protection	660.00	
City Hall	74.23	
		$39,748.47
Municipal Water Rents:		
Hydrants	$3,150.34	
Sprinkler	135.81	
		3,286.15
Miscellaneous Earnings		832.15
Total		$43,866.77

(More than 80% of the "ordinary" earnings and all "city hall" and "sprinkler" earnings were from metered services.)

If the "Private Water Rents" and the municipal sprinkling rate were increased 20% and the charge for hydrants 33⅓%, the revenues would be sufficiently increased to permit a rate of return of 6%, on the above valuation of $450,000.00. This would increase the maximum meter rate to 30 cents per thousand gallons and the hydrant charge to $40.00 per year. The present maximum meter rate is 25 cents per thousand gallons, and hydrant charge $30.00 per year.

If a rate of 7% were allowed, the total investment including deficit would be $492,495.68 and the net revenue would have to be $34,474.69, an increase of $16,921.27. This would necessitate an increase in the gross income of 38½%. If the hydrant charge were fixed at $40.00 per year the maximum meter rate would have to be increased to 35 cents.

Under the above plan, the valuation upon which the rate of return

is based is the undepreciated total investment and "net revenue" as used is net, after deducting taxes.

The above theory of valuation for rate purposes practically follows what is known as the "Wisconsin" plan and notwithstanding the fact that it has been used in this case by experts representing both litigants, it is the humble judgment of the writer that the past history of a utility as to net return, very remotely, if at all, reaches to the question of valuation as a basis for present rates.

1269 As shown by "Exhibit F—Water Works" the total actual net investment in this plant, on January 1, 1915 (December 31, 1914), after deducting depreciation, as shown by its books and records was $314,276.96. The writer is firmly of the opinion this net investment is a much truer basis for rate fixing purposes than the one used above.

Net earnings of $27,000.00 (6% on "Wisconsin" basis, as shown above, would be the equivalent of a yield of more than 8½% upon this net investment basis.

Net earnings of $34,474.69 (7% on "Wisconsin" basis), would be the equivalent of a yield of 11% on the actual net investment.

It has been suggested that certain items have been omitted from the plant account and the books and records of the company do not show the true investment. It is no doubt true that in building up a plant some items properly belonging to plant get into expense and some expense items get into the plant account, but with a plant as well and conservatively managed as this one has been, throughout its entire life, the aggregate value of such items, respectively, would be very small and should about offset each other. In any event the position of the company would be weakened by an assumption that this plant valuation is too low, as any increase in the plant investment necessarily means, both, a corresponding decrease in expenses and a corresponding increase in profits. This, of course, would be to the disadvantage of the company.

For the purpose of showing the detailed and complete manner in which the accounts of this company have been kept, even from its very beginning, the items carried to the plant account during the first eight months of the life of the company are hereunder shown:

Investment Detail.

From Cash Account.

1890.			
May	1.	Hauling to Storage Tank.....	$8.10
"	8.	" & Labor on Storage Tank	13.40
"	12.	Pipe & Fittings for Storage Tank	290.98
"	13.	Excavating & Masonry for Storage Tank	56.00
"	19.	Lead for Storage Tank.....	11.16
		N. & W. R. R. Co. Labor erecting & Framing Storage Tank..	147.73
		N. & W. R. R. Co. Freight on Material for Storage Tank.....	4.22

May	24.	3 Baileys Forfeits on 3 Options on 4 Springs	15.00
June	2.	Hauling Material to Storage Tank	3.00
		½ Salary & Expense for May of Engineer	44.85
1270			
1890.			
June	2.	Pay Roll—Laying Pipe to Storage Tank	$314.60
"	10.	Expressage & Telegram	.55
July	1.	Lead for Meter	9.02
		⅔ Salary & Exp. of Enginemen for June	56.00
		All Salary of Rodman for June	30.67
"	31.	½ " " " " July	20.00
"	1.	Freight $65.36 & Miscellaneous $1.50	66.86
"	31.	July Miscellaneous Disbursements	3.00
"	3.	Storage Tank Roof	100.00
"	9.	Cement for Meter	12.00
		Pipe & Fittings for Mercer Extension	155.68
		Drain Tile for Storage Tank overflow	36.44
		Labor, Material & Freight (By N. & W. Ry.)	86.28
"	31.	Telegram	2.00
		Trenches for Mains connecting New Springs	323.02
		4" Meter and Fish Trap	216.00
Aug.	19.	Expert report on Meter	58.94
		Charges for July Repairs (N. & W.)	15.70
		Telegram	.40
		Commission for Collecting one quarter's Water Rent to June 30th	7.39
		Motive power charges by N. & W.—Meter and Tank	74.77
		Lead	29.95
		July Pay Roll—Extension to Springs	172.41
		Balance a/c Right of Way—Extension to Springs	44.00
		Balance a/c Right of Way—Extension to Springs	44.00
		Pipe—April	10.08
		Cement (Refunded Aug. 25)	12.00
"	20.	½ Rodman Time	20.00
"	25.	Freight on One Car Load 3" Pipe	112.96
"	30.	Packing $3.60 Lead $150.57	154.17

		One Car Load 3" Pipe.....	620.24
		L. C. Tabb Disbursements.....	4.39
		" " Material & Hauling.....	20.25
		" " Pay Roll—Extension to Springs	272.01
		Part Payment on W. L. Marshall, Engineer, August Salary & Expense	12.70
		Freight on 4 Car Loads 4" Pipe..	281.44
		Material & Supplies, August.....	28.77
		Pay Roll August—Extension to Springs	488.32
Sept.	6.	Legal—Purchasing Springs	100.00
		Freight on Lead & Cement for Springs	7.27
		4 Car Loads 4" Pipe & Castings for Springs	1,537.13
		Lead for Springs.....	40.95
		Sleeves for Meter.....	2.28
		W. L. Marshall, Eng. part Salary a/c Springs	13.85
		W. J. Monroe, Part Salary a/c Springs	48.46
		Freight on Material a/c Springs.	6.26
		Pay Roll laying pipe a/c Springs	241.52
		Hauling a/c Springs.....	71.25
Oct.	24.	Pipe Fittings, etc. for Stock.....	103.77
		Tools, Etc. " "	31.31
		Cement used in September.....	12.60
"	27.	Freight on Water Pipe.....	131.09
"	31.	Pipe & Castings.....	503.25
		W. J. Monroe Salary Water Dept. Supt.	60.00
		Rodman $4.18 Chainman .92....	5.10
		Pay Rill Water October.....	329.23
		October bills	14.29

1271

1890.

Nov.	14.	Shovels & Picks.....	$7.25
		Lead	239.83
"	21.	Freight on Pipe, etc.....	266.94
		November Hauling a/c.....	48.95
		Pay Roll Water Works.....	340.21
		W. J. Monroe, Part Payment of Salary and Expenses.....	63.90
		3,504' 3" Water Main.....	599.75
Dec.	16.	Yard Hydrants, etc.....	87.45
"	31.	3,065' Galv. Pipe & Fittings.....	153.71
		W. L. Marshall, Eng. Part Payment of Salary.....	24.34

BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY

1. "Exhibit A - Balance Sheets - 1890-1907"
2. "Exhibit B - Profit & Loss - 1890-1907"
3. "Exhibit C - Balance Sheets - 1908-1915"
4. "Exhibit D - Profit & Loss - 1908-1915"
5. "Exhibit E - Real Estate"---(Under Separate Cover)
6. "Exhibit F - Water Works" Gross Investment, Depreciation and Net Investment.
7. "Exhibit G - Water Works" Revenue and Expenses.
8. "Exhibit H - Water Works" Capitalization, Etc.

Record No. 710

Exhibits prepared in connection with the Report made to the Public Service Commission by H. E. Hesse, Assistant Secretary & Statistician, Filed January 20th, 1917.

"Exhibit A-Balance Sheets 1890-1907"

BALANCE SHEETS

(Periods Ending December 31st)

	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906
Dr.																	
Water Works at Bluefield	$ 27,655.87	$ 39,833.39	$ 65,319.88	$ 67,460.70	$ 68,382.55	$ 72,770.71	$ 72,924.73	$ 74,249.38	$ 75,842.38	$ 77,902.71	$ 94,942.54	$132,695.61	$135,243.52	$139,968.54	$150,179.68	$154,922.31	$191,475.68
Land at Bluefield	147,473.28	175,389.24	178,198.85	206,335.82	206,503.00	207,425.23	206,606.21	207,475.67	207,577.93	206,826.23	208,953.84	208,905.65	206,476.24	206,299.30	225,269.41	179,350.75	110,164.24
Houses at Bluefield	24,110.74	51,276.18	49,214.34	50,625.46	51,332.26	51,344.26	51,438.76	51,438.76	51,438.76	51,438.76	47,344.51	45,794.51	40,273.15	32,776.04	31,198.99	25,575.28	---
Inventories, Material, Supplies, Etc.	---	---	---	---	---	---	---	---	---	---	---	134.69	2,110.51	3,744.11	5,073.81	4,563.77	5,963.61
House and Lot 6 - Sec. 32	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1,800.00
Cash	62,732.41	---	25.89	67.44	603.28	1,497.10	2,148.54	2,025.79	217.11	1,617.02	4,816.05	1,536.78	5,266.66	1,036.36	799.68	3,140.98	16,048.92
Bills, Accounts, Notes and Losses Rec.	29,406.85	38,809.64	39,393.74	26,560.61	20,139.28	15,220.82	14,191.70	16,954.25	15,571.78	15,113.09	13,390.44	10,312.91	6,249.67	26,334.46	41,628.01	124,063.28	181,783.16
J. H. Dingee, President	---	---	424.62	---	---	2,949.86	836.14	14,451.85	6,847.71	4,475.78	---	---	---	---	---	---	---
L. C. Tabb, Land Agent	---	568.53	780.68	1,418.59	3,039.31	4,312.99	---	---	---	---	---	---	---	---	---	---	---
Jos. I. Doran, Trustee	---	---	1,227.48	7,370.87	4,696.35	2,183.49	1,810.09	1,438.73	1,438.73	2,047.39	2,831.96	---	---	---	---	---	---
Wm. B. Campbell, Trustee	---	---	---	---	---	---	---	---	---	---	---	10,295.41	24,060.38	---	---	---	---
Undistributed Interest	---	---	---	---	---	---	---	1,727.50	1,554.75	1,382.00	1,209.25	---	---	---	---	---	---
Profit and Loss	---	---	---	---	---	---	207.89	---	---	---	---	---	---	---	---	---	---
Total	$291,387.15	$306,326.93	$334,684.48	$369,839.49	$356,696.03	$367,714.46	$353,160.86	$369,741.93	$369,888.97	$360,802.98	$373,488.59	$412,984.45	$419,700.85	$410,166.81	$454,149.68	$491,636.37	$507,235.61
Cr.																	
Capital Stock	$252,000.00	$252,000.00	$252,000.00	$252,000.00	$252,000.00	$252,000.00	$252,000.00	$252,000.00	$252,000.00	$252,000.00	$252,000.00	$252,000.00	$252,000.00	$252,000.00	$252,000.00	$252,000.00	$252,000.00
First Mortgage Bond Account	---	---	75,000.00	70,000.00	70,000.00	70,000.00	70,000.00	103,000.00	103,000.00	103,000.00	102,000.00	120,000.00	120,000.00	---	---	---	---
Bills, Accounts, Notes & Losses Payable	26,346.15	11,998.07	---	19,266.66	18,333.35	18,333.35	6,416.67	11,266.67	453.34	---	5,287.42	17,640.91	20,294.77	102,884.16	110,291.61	62,484.41	29,489.99
Dividend Fund	---	25,200.00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Improvement Fund	6,271.00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Contingent Fund	6,271.00	6,271.00	6,271.00	6,271.00	6,271.00	6,271.00	6,271.00	---	---	---	---	---	---	---	---	---	---
Cash	---	6,694.06	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Unentered Interest Account	---	---	---	3,461.89	1,099.16	1,585.56	---	---	---	---	---	---	---	---	---	---	---
J. H. Dingee, President	---	---	---	67.06	---	---	---	---	---	---	3,970.75	---	---	---	---	---	---
Virginia Land Company	---	---	---	8,383.34	---	---	10,000.00	---	---	---	---	---	---	---	---	---	---
Pulaski Land and Improvement Company	---	---	---	---	165.83	---	---	---	---	---	---	---	---	---	---	---	---
Suspense Account	---	---	---	---	---	---	473.19	797.70	967.36	1,142.05	1,362.00	---	---	---	---	---	---
Profit and Loss	499.00	2,163.78	1,313.48	439.84	826.71	1,524.57	---	2,677.56	3,466.29	4,360.93	11,868.42	13,343.52	27,405.26	55,282.65	91,858.07	177,151.96	225,745.62
Total	$291,387.15	$306,326.93	$334,684.48	$369,839.49	$356,696.03	$367,714.46	$353,160.86	$369,741.93	$369,888.97	$360,802.98	$373,488.59	$412,984.45	$419,700.85	$410,166.81	$454,149.68	$491,636.37	$507,235.61

"Exhibit B-Profit & Loss 1890-1907"

PROFIT AND LOSS.

(Periods Ending December 31st)

	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	To Close Account
To Sundries	$ 4,855.64	$ 4,454.89	$ 9,144.29	$ 7,018.96	$ 11,583.74	$ 12,932.66	$ 5,682.99	$ 7,178.70	$ 5,308.54	$ 4,174.42	$ 7,238.37	$ 22,106.14	$ 7,043.31	$ 10,731.52	$ 8,907.58	$ 5,508.85	$ 6,877.32	$ 1,976.11	$254,274.15
" Dividend Fund	6,800.00	25,800.00	15,139.00	8,820.00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
" J. H. Dingee, President	---	---	2,625.00	---	2,520.00	2,520.00	---	---	---	1,200.00	---	---	---	---	---	---	---	---	---
" Interest and Discount	---	---	---	3,461.59	---	---	6,431.16	6,397.60	6,515.10	6,796.82	6,946.82	---	7,055.01	6,013.74	5,400.71	---	---	---	---
" Balance	499.00	2,163.78	1,313.48	439.84	826.71	1,524.57	---	2,885.45	3,468.27	4,360.93	11,868.42	13,343.52	27,405.26	55,282.65	91,858.09	177,151.96	225,745.62	239,618.14	---
Total	$ 11,854.64	$ 31,818.67	$ 28,202.77	$ 19,740.39	$ 14,930.45	$ 16,977.23	$ 12,314.15	$ 16,461.75	$ 15,311.91	$ 16,532.17	$ 26,053.61	$ 35,449.66	$ 41,903.58	$ 72,027.91	$106,166.36	$182,660.01	$232,645.94	$241,594.25	$254,274.15
By Balance	$ ---	$ 499.00	$ 2,163.78	$ 1,313.48	$ 439.84	$ 826.71	$ 1,524.57	$ ---	$ 2,677.56	$ 3,468.27	$ 4,360.93	$ 11,868.42	$ 13,343.52	$ 27,405.26	$ 55,282.65	$ 91,858.07	$177,151.96	$225,745.62	$239,618.14
" Land at Bluefield	5,306.00	11,977.35	8,244.94	2,309.29	687.23	8,149.79	936.59	719.76	1,430.31	1,366.31	10,697.32	8,516.19	12,685.27	33,656.19	38,490.53	83,921.95	42,381.76	---	---
" Houses at Bluefield	955.00	1,302.21	1,221.09	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
" Sundries																			
Houses-Revenue & Expense	1,231.31	4,093.95	6,648.05	7,047.71	6,896.04	4,598.46	4,721.84	3,111.42	3,460.72	4,950.41	4,401.22	5,091.18	4,598.39	3,430.90	2,827.10	2,419.02	745.00	144.00	---
Water Works " " "	2,946.42	7,874.86	9,181.83	8,767.41	6,762.08	3,300.62	4,914.70	6,223.37	7,348.20	5,981.34	6,428.84	9,343.00	10,449.00	6,573.80	9,852.87	1,673.61	9,559.94	12,103.98	---
Miscellaneous	1,205.91	6,271.00	743.98	302.50	145.26	101.65	9.57	6,407.20	395.12	755.84	205.30	630.87	827.32	961.75	313.21	2,787.36	2,867.28	3,600.65	14,656.01
" Balance	---	---	---	---	---	---	207.69	---	---	---	---	---	---	---	---	---	---	---	---
Total	$ 11,854.64	$ 31,818.67	$ 28,202.77	$ 19,740.39	$ 14,930.45	$ 16,977.23	$ 12,314.15	$ 16,461.75	$ 15,311.91	$ 16,532.17	$ 26,053.61	$ 35,449.66	$ 41,903.58	$ 72,027.91	$106,166.36	$182,660.01	$232,645.94	$241,594.25	$254,274.15

DETAIL

Profit and Loss
To Sundry Accounts

Water Works	$26,687.67
Land	103,518.85
House & Lot No 6-32	1,800.00
Deferred Payments-Land	106,465.89
Accounts & Loans Receivable	7,685.00
Cash	5,116.74
Total	$254,274.15

BALANCE SHEETS
(Periods Ending December 31st)

"Exhibit C-Balance Sheets 1908-1915"

Water Works

	1908	1909	1910	1911	1912	1913	1914	1915
Dr.								
Water Works	$257,991.13	$271,721.67	$277,435.65	$288,191.73	$316,191.05	$297,474.91	$306,157.67	$312,894.25
Inventories	9,591.68	6,138.07	6,452.44	6,182.10	7,522.34	6,048.54	8,118.29	11,533.13
Accounts Receivable	6,347.42	3,824.11	283.54	706.75	2,041.33	8,974.18	6,851.43	11,729.26
Cash	809.99	3,056.01	2,179.01	8,462.94	1,062.05	2,417.22	5,165.40	1,735.53
Accrued Water Rents Unpaid	---	---	644.72	224.99	497.86	---	---	---
Total	$274,640.22	$284,739.86	$286,995.36	$303,768.51	$327,315.73	$314,914.85	$326,292.79	$337,892.17
Cr.								
Capital	$252,000.00	$252,000.00	$252,000.00	$252,000.00	$252,000.00	$322,000.00	$312,000.00	$312,000.00
Accounts Payable	20,636.46	21,885.52	21,699.52	25,552.83	51,727.22	2,175.40	4,342.70	3,102.05
Profit and Loss	2,003.76	18,854.34	13,295.84	28,215.68	23,588.51	739.45	9,950.09	22,790.12
Total	$274,640.22	$284,739.86	$286,995.36	$303,768.51	$327,315.73	$314,914.85	$326,292.79	$337,892.17

Land Department

	1908	1909	1910	1911	1912	1913	1914	1915
Dr.								
Land	$ 1,847.23	$102,618.30	$ 98,476.92	$ 98,476.92	$114,896.65	$105,027.64	$83,490.57	$ 81,914.32
Houses	1,309.58	1,900.28	1,900.28	1,900.28	10,295.34	10,295.34	8,795.34	6,495.34
Rock Crusher, Boiler & Engine	1,000.00	600.00	480.00	300.00	150.00	150.00	50.00	1.00
Wirgman and Kurtz	---	---	---	---	---	---	---	9,094.67
Loans & Accounts Receivable	16,088.28	17,104.31	20,205.99	21,100.33	28,272.52	9,384.75	8,499.08	9,113.82
Deferred payments on Sales	81,749.82	66,108.00	56,789.46	48,114.15	7,836.30	11,097.30	21,901.00	16,477.30
Profit and Loss	---	---	107.52	---	2,872.66	3,860.95	6,194.07	7,657.98
Cash	14,710.41	31,558.96	9,892.56	3,161.75	2,869.83	1,225.76	819.48	4,047.31
Total	$117,285.32	$219,889.85	$187,852.76	$173,053.43	$167,195.10	$141,041.74	$134,812.04	$134,801.74
Cr.								
Virginia Land Company	$ 81,920.06	$158,904.19	$139,658.16	$124,261.33	$124,261.33	$107,447.33	$102,643.33	$102,643.33
Virginia Investment Association	24,491.56	47,507.43	41,753.46	37,150.29	37,150.29	32,124.29	29,688.29	30,688.29
Accrued Interest	---	---	---	4,442.65	---	1,470.12	1,470.12	1,470.12
Loans and Accounts Payable	8,500.00	9,029.23	6,441.14	5,718.67	5,781.48	---	10.50	---
Profit and Loss	2,373.70	4,449.00	---	1,480.49	---	---	---	---
Total	$117,285.32	$219,889.85	$187,852.76	$173,053.43	$167,195.10	$141,041.74	$134,812.04	$134,801.74

P R O F I T A N D L O S S — 1908-1915

(Periods Ending December 31st.)

"Exhibit D-Profit and Loss 1908-1915"

Water Works

	1908	1909	1910	1911	1912	1913	1914	1915
To Sundries (Operating & Maint. exp.) ---	$13,720.80	$16,354.87	$21,294.96	$19,307.39	$19,814.12	$20,013.10	$ 26,340.85	$26,313.35
" Dividend Fund ----------	10,000.00	---	7,560.00	10,060.00	5,040.00	---	---	---
" Interest and Discount ----------	---	984.76	795.06	1,015.78	1,047.78	3,036.05	---	---
" Depreciation ----------	656.65	875.21	147.60	733.23	2,798.87	36,017.18	4,557.87	4,713.39
" Balance ----------	2,003.76	10,854.34	13,295.84	18,135.68	23,588.51	739.45	9,950.09	22,790.12
Total	$26,490.91	$29,069.18	$43,093.46	$49,272.08	$52,289.28	$59,805.78	$40,848.84	$53,816.86
By Balance ----------	$ ---	$ 2,003.76	$10,854.34	$13,295.84	$18,135.68	$23,588.51	$ 739.45	$ 9,950.09
" Water Rents ----------	25,838.30	26,167.07	32,051.66	35,890.24	33,979.96	36,166.72	39,908.98	43,034.62
" Sundries ----------	651.61	898.35	187.26	86.00	173.64	50.55	200.41	832.15
Total	$26,490.91	$29,069.18	$43,093.46	$49,272.08	$52,289.28	$59,805.78	$40,848.84	$53,816.86

Land Department

	1908	1909	1910	1911	1912	1913	1914	1915
To Balance ----------	$ ---	$ ---	$ 1,771.00	$ 107.52	$ ---	$ 2,872.66	$ 3,860.95	$ 6,194.07
To Sundries ----------	6,176.69	6,621.84	2,633.00	2,005.48	5,573.94	3,778.67	4,032.73	3,723.13
" Balance ----------	26.49	---	---	1,480.49	---	---	---	---
Total	$ 6,203.18	$ 6,621.84	$ 4,404.00	$ 3,593.49	$ 5,573.94	$ 6,651.33	$ 7,893.68	$ 9,917.20
By Balance ----------	$ ---	$ 26.49	$ ---	$ ---	$ 1,480.49	$ ---	$ ---	$ ---
" Sundries ----------	6,203.18	4,824.35	4,296.48	3,593.49	1,220.79	2,790.38	1,699.51	2,259.22
" Balance ----------	---	1,771.00	107.52	---	2,872.66	3,860.95	6,194.07	7,657.98
Total	$ 6,203.18	$ 6,621.84	$ 4,404.00	$ 3,593.49	$ 5,573.94	$ 6,651.33	$ 7,893.68	$9,917.20

"Exhibit F-Water Works"

GROSS INVESTMENT, DEPRECIATION AND NET INVESTMENT -- WATER WORKS

	Gross Investment (End of Year)			Annual Depreciation and Adjustments			Total Depreciation and Adjustments (End of Year)			Net Investment (End of Year)		
	Plant	Inventories*	Total	Plant	Inventories	Total	Plant	Inventories	Total	Plant	Inventories	Total
1890	$ ---	$ ---	$ 27,663.67	$ ---	$ ---	$ ---	$ ---	$ ---	$ ---	$ ---	$ ---	$ 27,663.67
1891	---	---	28,833.39	---	---	---	---	---	---	---	---	28,833.39
1892	---	---	65,319.88	---	---	---	---	---	---	---	---	65,319.88
1893	---	---	67,460.70	---	---	---	---	---	---	---	---	67,460.70
1894	---	---	68,382.58	---	---	---	---	---	---	---	---	68,382.58
1895	---	---	72,770.71	---	---	---	---	---	---	---	---	72,770.71
1896	---	---	72,924.72	---	---	---	---	---	---	---	---	72,924.72
1897	---	---	74,849.38	---	---	---	---	---	---	---	---	74,849.38
1898	---	---	75,842.20	---	---	---	---	---	---	---	---	75,842.20
1899	---	---	77,802.71	---	---	---	---	---	---	---	---	77,802.71
1900	---	---	94,942.54	---	---	---	---	---	---	---	---	94,942.54
1901	132,695.61	134.60	132,830.30	---	---	---	---	---	---	132,695.61	134.69	132,830.30
1902	135,843.52	2,110.51	137,354.03	---	---	---	---	---	---	135,843.52	2,110.51	137,354.03
1903	139,976.54	3,744.11	143,720.65	---	---	---	---	---	---	139,976.54	3,744.11	143,720.65
1904	150,179.68	5,073.81	155,253.49	---	---	---	---	---	---	150,179.68	5,073.81	155,253.49
1905	154,922.31	4,563.77	159,486.08	---	---	---	---	---	---	154,922.31	4,563.77	159,486.08
1906	191,475.68	5,963.61	197,439.29	---	---	---	---	---	---	191,475.68	5,963.61	197,439.29
1907	265,270.50	7,451.59	272,802.09	32,352.92	449.17	32,802.09	32,352.92	449.17	32,802.09	233,017.58	6,902.42	240,000.00
1908	290,344.05	10,365.85	---	---	345.00	345.00	32,352.92	794.17	33,147.09	257,991.13	9,571.68	267,562.81
1909	304,074.89	7,607.45	311,882.04	---	875.21	875.21	32,352.92	1,669.38	34,022.30	271,721.97	6,138.07	277,859.74
1910	309,788.57	8,269.42	318,057.99	---	147.60	147.60	32,352.92	1,816.98	34,169.90	277,435.65	6,452.44	283,888.09
1911	320,544.65	8,732.31	329,276.96	---	733.23	733.23	32,352.92	2,550.21	34,903.13	288,191.73	6,182.10	294,373.83
1912	349,991.52	11,424.37	361,415.89	29,323.31	1,351.32	30,674.63	61,676.23	3,901.53	65,578.16	288,315.29	7,522.84	295,838.13
1913	366,468.20	10,774.45	377,242.65	7,317.06	824.36	8,141.42	68,993.29	4,725.89	73,719.18	297,474.91	6,048.84	303,523.45
1914	379,551.78	13,524.87	393,076.65	4,400.82	680.09	5,080.91	73,394.11	5,405.98	78,800.09	306,157.67	8,118.29	314,275.96
1915	390,046.96	17,835.61	407,882.57	3,758.60	896.50	4,655.10	77,152.71	6,302.48	83,455.19	312,894.25	11,533.13	324,427.38
Total	$390,046.96	$ 17,835.61	$407,882.57	$ 77,152.71	$ 6,302.48	$ 83,455.19	$ 77,152.71	$ 6,302.48	$ 83,455.19	$312,894.25	$ 11,533.13	$324,427.38

* The term Inventories as used above includes Material and Supplies, Tools, Office Furniture and Fixtures, Surveying Instruments, Laboratory Outfit, Etc. Etc.

"Exhibit C-Water Works"

INCOME STATEMENT — WATER WORKS

Gross Revenues	1890	1891	1892	1893	1894	1895	1896	1897	1898
Total Gross Revenues	$ 3,127.84	$ 7,888.16	$ 9,708.81	$11,124.04	$ 9,011.73	$ 7,169.19	$ 7,140.66	$ 7.650.95	$10,796.98
Gross Expenses									
Total Gross Expenses	$ 651.42	$ 728.30	$ 1,596.98	$ 3,331.63	$ 3,284.65	$ 5,223.57	$ 3,425.96	$ 2,887.58	$ 4,639.78
Surplus for Year	$ 2,476.42	$ 7,159.86	$ 8,111.83	$ 7,792.41	$ 5,787.08	$ 1,945.62	$ 3,714.70	$ 4,763.37	$ 6,163.20

Gross Revenues	1899	1900	1901	1902	1903	1904	1905	1906	1907
Total Gross Revenue	$10,678.12	$10,860.00	$15,121.67	$16,515.42	$20,087.29	$22,857.23	$18,803.50	$23,811.43	$31,165.97
Gross Expenses									
Total Gross Expense	$ 6,641.78	$ 5,901.16	$ 8,298.67	$ 7,876.34	$15,394.49	$15,648.77	$17,864.69	$15,326.49	$20,289.99
Surplus for Year	$ 6,036.34	$ 4,958.84	$ 6,823.00	$ 8,639.08	$ 4,692.80	$ 7,208.46	$ 938.81	$ 8,484.94	$10,903.98

Gross Revenues	1908	1909	1910	1911	1912	1913	1914	1915
Water Rents - Private								
Ordinary	$ 24,222.79	$ 24,395.36	$ 30,139.89	$ 33,537.31	$ 31,805.89	$ 35,825.49	$ 36,797.51	$ 39,014.24
Fire Protection	230.00	227.27	294.69	517.13	520.00	632.95	686.67	660.00
City Hall	56.21	96.90	56.97	110.42	126.75	142.82	101.32	74.23
Water Rent - Municipal								
Hydrants	1,220.26	1,382.43	1,506.36	1,584.60	1,650.00	1,650.00	3,127.50	3,150.34
Sprinkler	108.04	66.31	53.95	140.78	177.42	215.76	195.98	136.61
Total Water Rents	$ 25,839.30	$ 26,167.07	$ 31,951.86	$ 36,890.242	$ 33,979.96	$ 38,166.72	$ 29,908.98	$ 43,034.62
Miscellaneous Earnings								
Rent - Bailey Farm	---	---	45.00	50.00	55.00	37.50	55.00	75.00
Interest, Etc. Etc.	651.61	898.35	142.26	36.00	118.64	13.05	145.41	757.15
Total Gross Revenues	$ 26,490.91	$ 27,065.42	$ 32,239.12	$ 36,976.24	$ 34,153.60	$ 38,217.27	$ 40,109.39	$ 43,866.77
Operating Expenses								
Salaries - Bluefield	$ 3,097.37	$ 3,922.06	$ 3,890.83	$ 3,720.00	$ 3,900.00	$ 3,900.00	$ 4,800.00	$ 4,800.00
" - Philadelphia	1,200.00	1,200.00	1,300.00	1,350.00	1,350.00	3,508.31	4,800.00	4,800.00
Wages - Engineman, Fireman and Pumper	1,204.31	911.29	1,722.89	2,213.62	1,602.04	1,907.53	2,404.41	2,257.45
" - Inspector	720.00	720.00	825.00	900.00	900.00	900.00	900.00	900.00
Office Expense	1,593.51	1,142.96	968.39	943.05	1,046.51	2,142.28	1,022.55	1,062.47
Coal (Including Freight, Hauling, Etc.)	898.65	286.75	967.53	2,496.61	1,043.52	1,076.49	2,393.07	2,380.97
Rent - Bluefield	---	---	---	---	65.00	455.84	277.50	---
" - Philadelphia	133.28	133.28	150.00	150.00	150.00	87.50	400.00	400.00
Insurance	11.67	93.78	156.43	76.66	112.85	192.13	221.39	220.73
Legal	919.65	1,494.04	1,633.61	1,823.76	604.90	210.00	200.00	220.00
Plumbers Bonds	---	---	40.00	40.00	40.00	40.00	40.00	25.00
Pipe Line Rental - N. & W.	---	5.00	5.00	5.00	5.00	5.00	10.00	10.00
W. C. and P. S. C. Funds	---	---	---	---	---	59.66	86.83	60.31
Traveling Expenses	132.73	172.29	195.77	58.50	---	172.95	22.30	---
Advertising, Donations and Dues	---	---	25.00	---	62.00	114.50	12.00	25.00
Stable and Labratory	143.65	140.40	159.28	154.89	129.78	118.63	101.29	19.75
Maintenance and Repairs	1,665.80	2,047.21	6,590.30	3,039.32	6,459.36	3,582.81	5,893.48	5,432.23
Miscellaneous	305.58	30.87	107.50	.40	---	200.00	---	181.28
Refunds, Adjustments, Losses, Etc.	---	1,685.91	313.38	248.25	271.96	172.31	307.51	8.40
Taxes	1,726.40	2,369.03	1,994.15	2,005.33	2,069.18	2,167.88	2,448.87	3,439.78
Total Operating Expenses & Taxes	$ 13,720.50	$ 16,354.87	$ 21,294.96	$ 19,307.39	$ 19,814.12	$ 20,013.10	$ 26,340.88	$ 26,315.35
Other Deductions								
Interest	---	884.76	795.06	1,015.78	1,047.78	3,036.05	---	---
Loss by Fire	---	---	---	---	1,447.55	228.88	272.76	---
Depreciation	656.65	875.21	147.60	733.23	1,351.38	7,912.54	4,285.11	4,713.39
Depreciation 1/1/'08 to 12/31/'12	---	---	---	---	---	27,875.76	---	---
Dividends	10,000.00	---	7,560.00	10,080.00	5,040.00	---	---	---
Total Disbursements	$ 24,487.15	$ 18,214.84	$ 29,797.62	$ 31,136.40	$ 28,700.77	$ 59,066.33	$ 30,898.75	$ 31,028.74
Surplus for Year	$ 2,003.76	$ 8,850.58	$ 2,441.50	$ 4,839.84	$ 5,452.83	$ 22,849.06	$ 9,210.64	$ 13,298.72

STATEMENT SHOWING EXCESS OF EXPENDITURES FOR ADDITIONS AND BETTERMENTS OVER REVENUES AFTER DEDUCTING OPERATING EXPENSES AND TAXES

"Exhibit H-Water Works"

	Total Revenues Less Operating Expenses and Taxes	Additions and Betterments	Excess Chargeable to Capital	Credit Balance to Surplus	Excess Chargeable to Surplus	Surplus Balance End of Year	Estimated Capital Investment	Estimated Capital Investment; Assuming a Return of 6% on Gross Investment
Initial Charge to Capital Stock a/c		$ 17,882.10	$ 17,882.10	$ ---	$ ---	$ ---	$ 17,882.10	$ 17,882.10
1390	$ 2,473.42	9,781.77	7,305.35	---	---	---	25,187.45	25,187.45
1391	7,159.06	11,169.52	4,009.66	---	---	---	29,197.11	30,854.94
1892	8,111.83	26,486.49	18,374.66	---	---	---	47,571.77	51,561.60
1893	7,792.41	2,140.82	---	5,651.59	---	5,651.59	47,571.77	51,561.60
1894	5,787.06	921.65	---	4,865.23	---	10,516.82	47,571.77	51,561.60
1895	1,945.62	4,388.16	---	---	2,442.54	8,074.28	47,571.77	55,557.19
1896	3,714.70	164.02	---	3,560.68	---	11,634.96	47,571.77	56,562.66
1897	4,763.37	1,384.65	---	3,438.72	---	15,073.68	47,571.77	57,299.42
1898	4,168.20	1,692.82	---	4,570.38	---	19,644.06	47,571.77	57,299.42
1899	5,036.54	1,960.51	---	3,075.83	---	22,719.89	47,571.77	58,658.70
1900	4,608.84	17,139.83	---	---	12,480.99	10,238.90	47,571.77	75,807.85
1901	6,823.00	37,887.76	20,825.86	---	10,238.90	---	68,397.63	112,569.16
1902	8,639.08	4,523.73	---	4,115.35	---	4,115.35	68,397.63	116,423.63
1903	4,692.80	6,366.62	---	---	1,673.82	2,441.53	68,397.63	126,378.69
1904	7,208.46	11,532.84	1,882.35	---	2,441.53	---	70,280.45	139,286.32
1905	938.61	4,232.89	3,292.98	---	---	---	73,574.46	151,895.50
1906	8,484.94	37,953.21	29,468.27	---	---	---	103,042.73	190,932.93
1907	10,903.98	75,362.80	64,458.82	---	---	---	167,501.55	267,238.11
1908	12,770.41	27,847.81	15,077.40	---	---	---	182,578.95	298,683.64
1909	10,710.55	11,232.14	521.59	---	---	---	183,100.54	317,249.02
1910	10,944.16	6,175.95	---	4,768.21	---	4,768.21	183,100.54	331,193.73
1911	16,668.65	11,218.97	---	5,449.68	---	10,218.09	183,100.54	344,827.33
1912	14,339.48	32,130.93	7,581.36	---	10,218.09	---	190,681.90	362,383.40
1913	16,804.17	15,826.74	---	377.43	---	377.43	190,681.90	403,690.92
1914	13,766.51	15,833.42	1,667.48	---	377.43	---	192,369.38	428,390.39
1915	17,553.42	14,806.52	---	2,746.90	---	2,746.90	192,369.38	449,228.05
Totals	$218,260.09	$407,882.57	$192,369.38	$ 42,620.20	$ 39,873.30	$ 2,746.90	$192,369.38	$449,228.05

	Lumber for Plumbing Shop.....	88.70	
	" " " "	49.26	
	W. J. Monroe, Dec. pay Foreman	60.00	
	Pipe, Tools & Castings.....	78.50	
	Pay Roll Water Works.....	140.90	
	Freight on Hydrants, Pipe, Sink, etc.	36.12	
			$9,793.77

From Capital Account.

Dec. 31.	Plant from Virginia Co.....	14,282.10	
	4 Springs bought of Baileys.....	3,600.00	
			17,882.10
			$27,675.87
	Less refund on Bill paid Twice.....		12.00
	Total		$27,663.87

(Here follow reproductions of Exhibits A, B, C, D, F, G, H, marked pages 1272, 1273, 1274, 1275, 1276, 1277, 1278, and 1279.)

1279a ***Supplementary Reports A & B, Relative to the Valuation of the Property of and the Determination of Equitable Rates for the Service Furnished by the Bluefield Water Works & Improvement Co., Bluefield, W. Va.***

August 16, 1916.

W. E. Miller, Consulting Engineer, Madison, Wisconsin. Sanders & Crockett.

1279b *Supplementary Report A.*

Value of the Springs of the Bluefield Water Works & Improvement Company.

1280 **Bluefield Water Works and Improvement Company.**

1281 "EXHIBIT E—REAL ESTATE."

Prepared in Connection with the Report Made to the Public Service Commission by H. E. Nease, Assistant Secretary & Statistician, Filed February 20th, 1917.

Lot.	Block.	Price.	Lot.	Block.	Price.	Lot.	Block.	Price.	Lot.	Block.	Price.
9	C	255	3	54	255	1	60	155	1	68	205
10	"	255	4	"	255	6	"	155	2	"	205
11	"	255	6	"	255	7	"	155	3	"	205
12	"	255	7	"	255	8	"	155	4	"	205
1	50	255	8	"	255	9	"	155	10	"	205
2	"	255	11	"	205	4	61	265	1	69	205
						6	"	215	2	"	255
3	"	255	12	"	270				7	"	355
4	"	255	13	"		7	"	215	1	71	405
5	"	255	14	"		8	"	215	2	"	
6	"	255	15	"		9	"	215	4	"	255

1	51	205	1	57	584	1	62	205	3	74	255
2	"	205	6	"	587	2	"	205	4	"	255
3	"	205	7	"	587	3	"	205	1	75	
4	"	205	14	"	444	4	"	205	2	"	
5	"	205	3	58	155	6	"	205	3	"	
6	"	205	9	"	155	7	"	205	4	"	1,500
9	52	255	10	"	155	8	"	205	5	"	
12	"	255	11	"	155	9	"	205	6	"	
13	"	255	12	"	155	10	"	200	7	"	
14	"	330	13	"	155	11	"	200	1	76	
15	"		15	"	155	12	"	200	2	"	
10	53	584	16	"	155	1	63	280	3	"	
11	"	584	17	"	155	2	"	280	4	"	2,000
15	"	505	14	59	155	8	"	280	5	"	
16	"	505	15	"	155	9	"	250	6	"	
17	"	505	16	"	155	10	"	100	7	"	
18	"	505	17	"	175	11	"	100	8	"	
						12	"	100			
						13	"	100			
						14	"	100			
						15	"	100			
						16	"	100			
1282						17	63	100			
						18	"	100			
						19	"	100			
						3	64	255			
						4	"	255			
						5	"	255			
						6	"	255			

EXHIBIT E.—*Continued.*

Lot.	Block.	Price.	Lot.	Block.	Price.	Lot.	Block.	Price.	Lot.	Block.	Price.
						1	65	205			
						2	"	205			
						9	67	155			
						10	"	155			
						11	"	100			
1	77	305				24	425	150	1	427	150
2	"	305				25	"	150	2	"	100
3	"	305				26	"	150	3	"	100
7	"	255				27	"	200	4	"	150
8	"	255	1	425	100	28	"	200	5	"	150
9	"	255	2	"	100	29	"	265	6	"	150
4	78	300	3	"	100	1	426	150	7	"	150
7	80	400	4	"	100	2	"	125	8	"	150
1	82 }	600	5	"	100	3	"	125	9	"	150
2	" }		6	"	100	4	"	125	10	"	150
5	"	400	7	"	100	5	"	125	11	"	150
6	"	400	8	"	100	6	"	125	12	"	150
8	"	400	9	"	100	7	"	125	13	"	150
9	"	400	10	"	100	8	"	125	14	"	150
3	85	400	11	"	100	9	"	125	15	"	150
7	87	400	12	"	100	10	"	125	16	"	150
			13	"	100	11	"	125	17	"	125
			14	"	100	12	"	125	18	"	125
			15	"	100	13	"	125	19	"	125
			16	"	100	14	"	125	20	"	125
1283			17	425	100	15	426	125	21	427	125
			18	"	150	16	"	125	22	"	125

			19	"	150	17	"	125	23	"	125
			20	"	150	18	"	150	24	"	125
			21	"	150				25	"	125
			22	"	150				26	"	125
			23	"	150				27	"	125
28	427	125	23	428	100	1	431		10	432	
29	"	125	24	"	100	2	"		11	"	
30	"	125	25	"	100	3	"		12	"	
31	"	125	26	"	100	4	"		13	"	
32	"	150	1	429		5	"		14	"	
1	428	100	2	"		6	"		15	"	
2	"	150	3	"		7	"		16	"	
3	"	100	4	"		8	"		17	"	
4	"	100	5	"		9	"		18	"	
5	"	100	6	"		10	"		19	"	
6	"	100	7	"		11	"		20	"	
7	"	100	8	"		12	"		21	"	
8	"	100	9	"		13	"		22	"	
9	"	100	10	"		14	"		23	"	
10	"	100	11	"		15	"		24	"	
11	"	100	12	"		16	"		25	"	
12	"	100	13	"		17	"		26	"	
13	"	100	14	"		18	"		27	"	
14	"	100	15	"		1	432		28	"	
15	"	100	16	"		2	"		29	"	
16	"	100	1	430		3	"		30	"	
17	"	100	2	"		4	"		31	"	
18	"	100	3	"		5	"		32	"	
19	"	100	4	"		6	"		33	"	
20	"	100	5	"		7	"		34	"	

EXHIBIT E.—*Continued.*

Lot.	Block.	Price.	Lot.	Block.	Price.	Lot.	Block.	Price.	Lot.	Block.	Price.
21	428	100	6	430		8	432		35	432	
22	"	100	7	"		9	"		36	"	
			8								

Sections 429, 430, 431, 432 — 14 Acs. @ $50.00 = ... 700.00

Land between boundary line North Side & Sections 65-68-69 & 77 not plotted approximating 10 Acs. @ $50.00 = ... 500.00

8 Houses @ 1,000 each = ... 8,000.00

								{Tank} {Lot.}			
37	432	...	17	33	250	6	44		27	45	400
38	"	...	18	"	200	1	45	250	28	"	450
39	"	...	19	"	200	2	"	250	29	"	250
40	"	...	20	"	200	3	"	350	30	"	250
41	"	...	21	"	200	4	"	300	1	46	100
42	"	...	22	"	250	5	"	350	5	"	Sold.
43	"	...	23	"	250	6	"	350	6	"	200
1	433	75	24	"	250	7	"	350	7	"	200
2	"	75	25	"	225	8	"	350	1	47	400
3	"	100	5	38	400	9	"	350	2	"	400
4	"	100	5	41	400	10	"	250	3	"	400
5	"	100	1	42	350	11	"	250	4	"	400
6	"	100	2	"	300	12	"	300	5	"	400
7	"	75	3	"	300	13	"	300	6	"	400

7	"	75	3	"	300	13	"	300	6	"	400
8	"	100	4	"	300	14	"	350	7	"	400
9	"	100	5	"	350	15	"	350	8	"	300
10	"	150	1	43	400	16	"	500	9	"	300
11	"	150	2	"	400	17	"	400	10	"	200
12	"	150	5	"	500	18	"	350	11	"	200
13	"	150	6	"	500	19	"	400	12	"	200
14	"	150	7	"	500	20	"	300	13	"	200
15	"	150	8	"	500	21	"	300	1	48	300
16	"	200	9	"	500	22	"	250	2	"	200
22	26	300									
1285											
15	31	200	10	43	500	23	45	250	3	48	225
14	33	250	11	"	500	24	"	250	4	"	225
15	"	250	12	"	500	25	"	400	5	"	250
16	"	250	13	"	750	26	"	400	6	"	250
7	48	250	1	157	1,000	4	199	350	1	217	175
8	"	225	2	"	900	5	"	350	2	"	200
9	"	225	3	"	900	6	"	350	3	"	200
10	"	200	4	"	900	7	"	450	4	"	200
11	"	200	5	"	900	1	200	450	5	"	200
12	"	200	6	"	1,000	2	"	400	6	"	200
13	"	200	1	158	1,000	3	"	300	7	"	250
14	"	200	2	"	900	4	"	300	1	219	200
15	"	200	4	176	480	5	"	300	2	"	200
16	"	200	6	"	480	6	"	350	3	"	200
17	"	200	7	185	480	1	201	400	4	"	200
			3	191	350						
			4	"	350						
			3	192	350						

EXHIBIT E.—*Continued.*

Lot.	Block.	Price.	Lot.	Block.	Price.	Lot.	Block.	Price.	Lot.	Block.	Price.
18	"	200	4	194	350	2	"	350	5	"	200
19	"	200	5	"	350	3	"	350	6	"	225
20	"	200	6	"	350	1	205	300	1	220	150
21	"	200	7	"	350	2	"	250	2	"	150
22	"	200	8	"	450	3	"	250	3	"	150
23	"	200				4	"	250	4	"	200
24	"	200				5	"	250	5	"	200
25	"	200				6	"	250	6	"	200
26	"	200				7	"	250	7	"	200
27	"	250				8	"	250	8	"	200
21	{Red Lot}	5,000				9	"	250	1	221	200
22	"	5,000				1	216	200	2	"	150
23	"	5,000				2	"	175	3	"	150
28	"	6,682				3	"	100	4	"	150
1286											
5	156	900				4	216	175	5	221	150
6	"	1,000							6	"	200
1	222	200	18	225	200	16	226	150	9	330	250
2	"	200	19	"	200	17	"	150	10	"	250
1	223	200	20	"	200	18	"	150	11	"	250
2	"	200	21	"	175	19	"	150	12	"	250
1	224	100	22	"	200	20	"	150	13	"	250
2	"	100	23	"	200	23	"	150	14	"	250
3	"	125	24	"	200	24	"	150	15	"	250

3	"	125	24	"	200	24	"	150	15		250
4	"	125	25	"	200	25	"	150	16	"	250
5	"	100	26	"	200	26	"	150	17	"	250
6	"	150	27	"	150	27	"	150	18	"	250
1	225	200	28	"	150	28	"	150	19	"	250
2	"	200	29	"	150	29	"	150	20	"	250
3	"	200	1	226	100	30	"	200	21	"	250
4	"	250	2	"	100	31	"	200	22	"	250
5	"	200	3	"	100	16	322	250	23	"	200
6	"	200	4	"	100	10	324	150	24	"	200
7	"	200	5	"	100	6	327	150	5	332	200
8	"	200	6	"	100	8	"	200	6	"	250
9	"	200	7	"	100	2	329	200	7	"	250
10	"	200	8	"	100	3	"	200	8	"	200
11	"	200	9	"	100	4	"	200	9	"	200
12	"	200	10	"	100	5	"	200	10	"	200
13	"	200	11	"	150	12	"	350	11	"	200
14	"	200	12	"	150	13	"	300	12	"	200
15	"	200	13	"	150	6	330	250	13	"	200
16	"	200	14	"	150	7	"	250	14	"	200
17	"	200	15	"	150	8	"	250	15	"	200
16	332	200	20	333	300	6	337	150	16	339	150
17	"	200	21	"	400	7	"	150	17	"	150
18	"	200	1	334	250	8	"	250	18	"	150
1287											
19	332	200	2	334	250	1	338	250	19	339	150
20	"	200	3	"	250	2	"	250	20	"	150
21	"	200	1	335	300	3	"	250	21	"	150
22	"	200	2	"	200	4	"	250	22	"	150

EXHIBIT E.—*Continued.*

Lot.	Block.	Price.	Lot.	Block.	Price.	Lot.	Block.	Price.	Lot.	Block.	Price.
23	332	200	3	335	200	5	338	250	23	339	150
24	"	200	4	"	250	6	"	250	24	"	100
25	"	200	5	"	250	7	"	250	25	"	100
1	333	200	6	"	250	8	"	250	26	"	100
2	"	200	7	"	250	9	"	250	27	"	100
3	"	200	1	336	300	1	339	150	28	"	100
4	"	200	2	"	250	2	"	150	1	340	150
5	"	200	3	"	250	3	"	150	2	"	150
6	"	200	4	"	250	4	"	150	3	"	150
7	"	200	5	"	250	5	"	150	4	"	150
10	"	250	6	"	250	6	"	150	5	"	150
11	"	250	7	"	250	7	"	150	6	"	150
12	"	300	8	"	250	8	"	150	7	"	150
13	"	300	9	"	250	9	"	200	8	"	200
14	"	300	10	"	400	10	"	200	9	"	200
15	"	300	1	337	100	11	"	200	10	"	200
16	"	300	2	"	100	12	"	200	11	"	200
17	"	300	3	"	150	13	"	200			
18	"	300	4	"	150	14	"	200			
19	"	300	5	"	150	15	"	150			

Grand Total $179,817

1288 Value of the Springs of the Bluefield Waterworks and Improvement Company.

Any estimate of the value of the springs, or their waters, over and above the cost of purchasing and developing them, which depends upon the determination of the relative total costs of water from these and other sources is a departure from the cost of reproduction theory of valuation, except as it results in fixing the limit, established by the next available source of supply, to the reasonable cost of purchase and development of the supply being valued.

For the purpose of valuation of the waterworks property it is assumed that the city exists in all respects as it now is except that it has no waterworks, and never did have one. The first question then becomes—"what would be the cost of acquiring and constructing the property and plant which the company now has, regardless of whether or not it represents the most economical development which could be made?"

With such situation in mind, who could say, and prove, that the landowners from whom the springs would now have to be acquired would have the same exaggerated and false notions as to the intrinsic values of the springs which they are said to have acquired during the operation of the existing works, and now hold?

It cannot be assumed that the city of Bluefield existed without a public water supply works without also assuming at the same time that the people were supplied with water in some other way, for water may be said to be one on the absolute necessities. It is not
1289 necessary or important, however, to speculate on how the inhabitants might otherwise have supplied themselves with this necessity. Various methods might have been adopted.

Reference was made above to the effect of basing the value of the spring water supply on the relative cost of water from the next available source, the effect being the determination of the extreme upper limit of such value. A reasonable value for all concerned is hardly the highest value which can be calculated with any showing of reason, any more than would be the minimum value.

Mr. Alvord has derived a value of $47,520 for all of the company's springs, which he then puts in round numbers at $50,000.00, this amount being in excess of the cost of purchase and development of the springs.

There are not less than four principal objections which may be made to the conclusions reached by Mr. Alvord in reference to this matter.

I. Capacity of Proposed Substitute Plant Compared with that of Present Supply.

Mr. McCarthy testified that the demand for water increases as the supply available from the present sources decreases, long periods of dry weather greatly affecting the yield of the springs, and that during such periods in the past the company had been obliged to deliver every drop of water it had available. During other seasons the

springs are obviously more than adequate and a varying portion of the flow from certain of these springs is useless, and therefore valueless. Only when the total flow from all of the company's developed springs reached its minimum has the entire flow been re-
1290 quired. This minimum yield of the springs, which also appears to be the maximum requirement of the service (allowance being made for effect of the supply stored in the Bluefield tanks in compensating for comparatively rapid fluctuations in the actual rates of consumption at different hours of a day) has been stated to be approximately from 1,065,000 to 1,115,000 gallons per day.

This amount should be the maximum capacity of the substitute plant which is assumed as the basis for calculating the saving produced by the present supply over the cost of water from the next available source, because the excess yield of the company's springs above their minimum is useless and valueless. The designing of the assumed substitute plant does not, in this case, have the usual aspect of engineering design, namely, the making of proper provision for present needs and future growth in business. In this case the design must be limited to the same useful capacity which the present supply possesses, because the effect of using a substitute plant of greater capacity is to increase the investment and therefore the interest and depreciation charges, which in turn increases the cost per million gallons of water from the substitute supply delivered in Bluefield, increases the apparent saving produced by present supply and hence it leads to an erroneous conclusion as to the excess value of present supply over cost of purchase and development thereof.

Mr. Alvord's assumed substitute plant on the Bluestone River includes a filter plant of two million gallons daily capacity, estimated at costing $15,000 per million gallons, or $30,000 in all. The estimate includes approximately 4 miles of delivery main, 16 inches in
1291 diameter, estimated to cost $2.50 per lineal foot, or a total of $52,640. The capacity of pipe of this size is 3.2 times the capacity of 10″ pipe which is the size actually provided to carry the water pumped by the company's Ada station to the city. Exclusive of extras for difficult excavation on all of the pipe covered by inventory Item #9, the 10″ main from Ada station is estimated by Mr. Alvord to involve a cost of reproduction new of $1.31 per foot for pipe and pipe-laying under the ordinary or usual conditions. On the basis of Class D pipe (Am. W. Wks. Ass'n. Specification) at $26.00 per ton there would be a difference of $1.06 between 10″ and 16″ pipe alone, no difference in laying costs being considered. A 10″ pipe line is of ample capacity to carry the supply afforded by the springs, the average daily use being stated in Mr. Alvord's inventory of the company's property at 870,000 gallons. A difference of $1.06 per foot between 10″ and 16″ pipe would make a total difference on the entire quantity (21,056 lin. ft.) of $22,319.00, exclusive of the 15% added for overheads or general costs. It would be much more economical to deliver the required water supply through a 10″ pipe line under the increased pressure involved than through a 16″ line under the smaller pressure, owing to the much greater interest requirements of the larger pipe line. The question is simply one of

balancing the higher fuel expense occasioned by the 10″ line against the higher interest charges caused by the 16″ line.

Similar objections can be made to at least some of the other features of Mr. Alvord's assumed substitute plant. Their capacities, and therefore their costs, are somewhat too large to be consistent with the purposes of this case. From present information the same cannot,
1292 however, be said of the items "land" and "dam," as no information whatever has as yet been obtained by the writer on which to base judgment as to the probable costs of these items. The estimate includes $80,000 for the sum of those two items, but with their proportion of the overhead costs (15%) they would be responsible for $92,000.

The interest charge (at 6%) on each $10,000 reduction which might fairly be made in the first cost of the assumed substitute plant by limiting its capacity to that of the springs, would, alone, eliminate fully 15% of the calculated excess value of springs over their cost of purchase and development as derived by Mr. Alvord. Difference between cost of 10″ and 16″ pipe, together with its proportion of overhead costs (15%) would account for a reduction of over $25,000 in first cost of entire Bluestone River plant and eliminate three-eighths of the excess value found for the springs.

It is not readily practicable at this time to determine and state the total amount of reduction in cost of a plant on the Bluestone River which might be made by limiting its capacity to that of the present supply, but it does appear certain that the amount would be sufficient to overcome the greater part of the annual saving of $3,960 effected by the present supply over one from Bluestone River, as calculated by Mr. Alvord, and thus destroy the greater part of the value found by him for the springs.

II. Operating Expenses.

For the assumed Bluestone River Plant Mr. Alvord estimates the fuel economy at less than one-half that actually shown year after year by the company's Ada pumping station records, but the Ada
1293 station has been pumping only about one-half the quantity of water on which the cost of the Bluestone supply is figured. In other words, the yearly output of the Ada station is roughly one-third of the capacity of one of its pumps, while the assumed output at Bluestone (the entire supply for the city) would be two-thirds of the yearly capacity of the same (Ada) pump. The fuel economy at the Bluestone plant should be greater than that at Ada because of being operated at so much nearer the rated capacity.

This objection will not be answered by showing that in Mr. Alvord's comparison of costs per million gallons of water from present and substitute sources he assumes the same low fuel economy in both the existing and the hypothetical plants. The Bluestone plant is assumed to deliver the entire supply of water for the city, while the existing plant at Ada furnishes roughly one-half of it. The application of the low fuel economy to the pumping of the other half of the supply at the Bluestone River plant is what creates a false show-

ing in favor of the present supply, and results in finding a larger value for the springs than would otherwise be the case.

On page 5 (Mr. Alvord's "Preliminary Estimates for Water Supply, Bluefield, W. Va., as Bearing on the Value of Water from the Springs of the Bluefield Waterworks & Improvement Co.") it is stated "5 lbs. of water evaporated per lb. of coal," which is one of the assumptions on which the estimate is based. On that basin 200 lbs. of coal would be required to convert 1,000# of water into steam. On the same page is the further assumption that "Station duty = 40,000,000 ft. lbs. per 1,000 lbs. of dry steam." This means that the net effective work done by 1,000 lbs. of steam (or 200 lbs. of coal) is the raising of such weight of water pumped,
1294 through such height (represented by the sum of suction and discharge pressures, including pipe-resistance to flow, expressed in feet head of water) that the product is 40,000,000 ft. lbs.

It will be obvious that the two assumptions, when combined, are equivalent to the single assumption that 20,000,000 ft. lbs. of useful work will be done by the steam generated from 100 lbs. of coal burned under the boilers.

Records of the Ada pumping station as to the amount of coal used and number of gallons of water pumped are shown below for the five years 1911-1915 inclusive, together with the plant efficiencies for each year as computed from those records and expressed in ft.-lbs. of work done per 100 lbs. of coal used.

Year.	Coal used (lbs.).	Gallons pumped.	Duty—ft.-lbs. per 100# coal.
1911	1,385,865	149,883,874	51,600,000
1912	1,298,468	147,700,099	54,200,000
1913	1,575,197	182,437,329	55,250,000
1914	1,837,607	157,172,895	40,750,000
1915	1,774,046	162,799,852	43,800,000
5 Year Totals	7,871,183	799,994,049	.....
Daily average	4,313	438,353	48,510,000

In calculating the above actual station duty of the Ada plant, a gallon of water is considered as 8.3 lbs., and the total lift is taken at 575 ft., as was done by Mr. Alvord in his computations, and Mr. McCarthy testified that that lift was about correct.

The price of coal is taken by Mr. Alvord at $1.75 per ton, but it appears that the actual cost was $1.55 per ton in 1911, '12 and '13 and $1.32 in 1914 for what coal was used at the Ada plant.
1295 (1915 price not yet ascertained).

It is understood that no records were kept of the amount of water pumped at the company's Beaver Pond station, to which the coal used had to be hauled by wagon at an extra cost of $1.50 per ton. It is also understood however, that the amount of water pumped at this plant during recent years has been comparatively quite small.

The obvious effect of including the Beaver Pond pumpage and pumping costs, if ascertainable, would be to increase the cost per mil-

lion gallons of water from present sources and decrease the otherwise apparent economy of the present supply as compared with that from the assumed Bluestone River plant. This would reduce the value otherwise derived for the springs.

In his final testimony of July 27, 1916, Mr. Alvord endeavored to explain that he had, in his estimate of springs' value, taken into account the low duty of the Beaver Pond station as compared with that of the Ada station in arriving at a comparative cost per 1,000,000 gallons of water from present sources delivered in Bluefield. The fact is that his estimate of fuel expense in connection with the present supply is considerably greater than has actually been the case, making the derived cost of water from present sources, per million gallons delivered in Bluefield, too high. The correction of this part of his estimate alone would increase his calculated saving of present supply over similar unit cost of water from the Bluestone, and increase the springs' value. But the calculated cost of water from the Bluestone River, per million gallons delivered in Bluefield, contains a similar error of greater consequence, and when both these
1296 corrections in fuel expense are made the apparent saving creditable to the present supply (and consequently the springs' value) is reduced, regardless of any question as to the necessary investment in the Bluestone River plant.

The substitution of actual average annual cost during last 5 years instead of estimated cost of fuel in connection with the present supply, and the substitution of 50,000,000 ft. lbs. duty per 100# coal in place of 20,000,000 for the Bluestone River plant, also the substitution of a price of $155 per ton instead of $1.75 for coal, but making no change, for the present, in the investment charges, would make the apparent cost of water from present supply $6.86 per million gallons less than that from the Bluestone River, instead of $12.45. These corrections alone, neglecting effect of difference in interest charges, would reduce the annual saving computed by Mr. Alvord (3,960) to $2,182 and the excess value of Springs from $47,520 to $26,185. Then the making of proper correction for interest and depreciation charges would substantially, if not entirely, eliminate this remainder of the calculated springs' value.

III. Principle Involved.

The calculation of an excess value of the springs over cost of purchase and development from the saving shown by this source in comparison with some other is precisely analogous to the numerous attempts heretofore made to get the current generated by
1297 hydro-electric plants valued on the calculated cost of its generation by steam power. It is obvious that in communities where water power is readily available and no fuel for steam production is to be had locally the effect of such theory would be to deprive the people of the water power community of the benefit of having located near the water powers.

There are numerous legal authorities which have held to the principle that the benefits of immediate natural resources are not to be

taken from the public and credited to the few who may use those resources in the service of the public. Such opinions are found in decisions of rate cases affecting electric light and power companies who generate current from hydraulic power.

In this case there would be no use for and consequently no possible value to the springs if the people of Bluefield had not located in the vicinity of them. Although the springs belong to the water company, any use for and value of them is brought about by the location of the people in proximity to the springs rather than in proximity to some other water supply. People settle only where water is available, not in a desert, and the water rates they should pay should not be governed in any measure by speculation as to what rates would be necessary to meet the cost of furnishing water from some other and more remote source. This is the same principle which was followed in those electric utility rate cases which held that rates for current generated from water power were not to be made equal to those which would be necessary to meet the higher costs of steam generation.

1298 IV. Excess Over Cost.

Estimated excess value over cost of purchase and development does not belong in an estimate of cost of purchase and development to which the reproduction theory of valuation is limited.

Conclusion.

In view of the foregoing, the item of $50,000 claimed for springs' value in excess of cost of purchase and development is wholly unjustifiable, both from an engineering and from a legal point of view.

It would be further unjustifiable from a consideration of the more economical scheme of development which might now be applied if the property were not in existence and a water supply project were now being originated. Attention is called to the fact that the waters of most of the springs of the Ada group emerge from the ground at greater elevations than the twin tanks in the city. These waters are allowed to flow downward through vertical distances of from 500 to 673 ft., and are then pumped upward through a vertical distance of 536 ft., involving the annual expenditure of a great deal of unnecessary power. It is very doubtful that any capable engineer would, in originating a water supply system for Bluefield at this time, follow the same plan as has resulted from the piecemeal development of the past. It is believed that a much more economical scheme of development could and would be made if Bluefield were not already supplied with water in the way that it is. Testimony that any other suggested plan of development would be impracticable must be clearly supported by specific reasons, or it is worth no more than another's testimony that such other scheme is
1299 practicable.

Certainly it would seem that if the company's property, as it is, does not represent the most economical development of the

present supply which might be made, it would hardly be equitable from the point of view of the public to further increase the cost of the service by adding some amount based upon the still higher cost of water from a more remote source.

1299½ *Supplementary Report B.*

Comments Relative to the Making of Equitable Rates for the Service Furnished by the Bluefield Water Works & Improvement Company, Bluefield, W. Va.

1300 Comments Relative to the Making of Equitable Rates for the Service Furnished by the Bluefield Water Works & Improvement Company, Bluefield, W. Va.

Any determination of equitable rates for any public utility service involves five primary determinations, namely,—

(1) Value of the property used in furnishing the service, including tangible and intangible elements of property value.

(2) Amount of reasonable net earnings to which the owners of the property are entitled, this being governed by the property value and the fair rate of return found necessary to cover interest and profit.

(3) Amount of earnings necessary to take care of the depreciation of plant, so that the integrity of the invested capital shall be preserved.

(4) Normal and reasonable costs of operation, taxes included.

(5) Proper distribution of the sum of items (2), (3) and (4) among the various classes and individuals served.

Items (2), (3) and the tax portion of item (4) are directly related to the property value while the costs covered by the remainder of item (4), namely, the direct operating expenses, are not.

The direct operating expenses of any single year cannot be accepted as a basis for equitable rates until they are compared with those of other years of a series and found to be both normal and reasonable.

1301 Examination of the annual totals of operating expenses of the Bluefield Water Works & Improvement Company for the years 1905 to 1914, inclusive, shows them to be very erratic. The accounts of no single year can be taken as normal without an analysis, or study of detailed costs, determining what items are abnormal, and how much so. The purpose of this discussion is not to make such analysis and show what the normal and reasonable total annual operating expenses should be, but rather to direct attention to certain items which are believed to warrant special consideration and to constitute unreasonable charges against the consumers.

Offices in Two Cities.

The accounts appear to include office expenses in two widely separated cities. The company's Bluefield office building is amply large for the conduct of the business. Taking the water works of the country as a whole it could undoubtedly be shown that but very few, comparatively, are conducted from offices in two different cities. Two offices may be convenient to the owners but more than one is unnecessary for the conduct of the business. The extra expenses occasioned by the remote offices are hardly a proper charge against the reasonable cost of the service.

Reasonableness of Executive Salaries Charged.

The most striking charge made against the cost of service is in the recent annual accounts for general officers' salaries. The sum of these has been increased during recent years to $9,600 per annum,
1302 which is approximately 25% of the company's annual income. This is considered as unquestionably exorbitant, as will be clearly shown by comparison of the amounts of general officers' salaries in the cases of numerous other privately owned water plants in other cities of comparable size.

The following table presents the annual amounts of general officers' salaries, also the sums of the salaries of general officers and general office clerks for 16 privately owned water utilities in Wisconsin, and the annual gross income of each plant for one year, as copied from the reports of these companies to the Railroad Commission of Wisconsin, and shows the derived ratios between each of the first two and the latter figure.

Data from Annual Reports to Railroad Commission of Wisconsin by Privately Owned Water Utilities in Wisconsin.

Location of plant.	Population of city (1910 census).	Report for year ending June 30.	Gross income.	Salaries of gen. officers.** Amt.	Salaries of gen. officers.** % of income.	Salaries of gen. officers & gen. office clerks. Amt.	Salaries of gen. officers & gen. office clerks. % of income.
Ashland	11,594	1916	56,781.32	4,429.72	7.8	5,862.09	10.3
Antigo*	7,196	1913	26,088.49	1,200.00	4.6	2,187.50	8.4
Appleton*	16,773	1911	49,623.36	1,800.00	3.6	2,224.00	4.5
Beaver Dam*	6,758	1913	22,826.23	2,100.00	9.2	3,300.00	14.45
Fond du Lac*	18,797	1910	47,331.40	3,500.00	7.4	4,336.00	9.15
Green Bay	25,236	1916	35,580.77	4,300.00	4.5	6,515.00	6.82
Janesville*	13,894	1914	46,951.77	6,399.96	13.63	6,399.96	13.63
Manitowoc*	13,027	1911	41,765.68	7,200.00	17.2	7,800.00	18.68
Marinette	14,610	1915	49,225.70	1,800.00	3.66	2,192.77	4.45
Menominie*	5,036	1914	16,518.87	2,200.00	13 32	2,200.00	13.32
Merrill	8,689	1915	24,933.60	1,150.00	4.6	1,151.25	4.6
Oconto	5,629	1916	18,577.54	100.00 1,200.00	7.0	1,692.50	9.1
Oshkosh*	33,062	1913	77,586.68	5,840.00	7.5	6,800.00	8.76
Racine	38,002	1915	145,850.90	2,400.00	1.65	3,885.70	2.66
Sheboygan*	26,398	1908(a)	72,115.90	4,000.00	5.55	8,531.81	11.83
Stevens Point	8,692	1915	24,496.55	2,100.00	8.58	4,170.00	17.02
Totals 16 plans	253,393		816,254.76	51,719.68	.....	69,248.58	.....
Average	15,839		51,015.92	3,232.48	6.33	4,328.04	8.48

(a) Year ending Jan. 31, 1908.
**Including Superintendent.
*Plant purchased by city shortly after making of report used in this table.

1303 There are certain facts to be considered in connection with the figures in the above table:

First, that the four plants showing the highest ratio between general officers' salaries and gross income (Janesville, Manitowoc, Oshkosh, and Stevens Point) were all owned by a small group of men, closely associated if not all financially interested in each of the four plants; second, that the Railroad Commission of Wisconsin, in rate and municipal purchase cases involving two of these plants (Janesville and Manitowoc) ruled that the amounts charged into operating expenses for general officers' salaries were exorbitant and disallowed the full amounts so charged; third, the amounts so charged by the companies in these cases are included in the above table and affect the averages.

Four others of the plants in the above list were formerly owned and operated by the American Water Works and Guaranty Company of Pittsburgh, Pa., which company was succeeded in ownership of these and numerous other water plants in other states by the American Water Work and Electric Company of New York City. These four plants are those at Marinette, Merrill, Racine and Sheboygan.

In the Manitowoc case, in which the commission determined the purchase price to be paid by the city for the plant (7 W. R. C. R.—71-130), the commission investigated and considered not only the reproduction cost and cost of reproduction less depreciation, but also the original investment cost, operating expenses and net earnings. The commission held that the company's accounts showed too much of the earnings taken in the form of large salaries,
1304 and that the earnings were in reality greater than they were made by the accounts to appear. The discussion of this item of expense in that case will be found on pages 100-102 (7 W. R. C. R.), in which some comparisons are presented between the Manitowoc and ten other privately owned Wisconsin water plants. Those comparisons, however, are between salaries of general officers and total operating expenses (exclusive of taxes and depreciation) instead of between salaries and total income as was done in the foregoing tabulation herein.

In the Janesville case, wherein the commission investigated rates and ordered a new schedule into effect, in place of former rates (7 W. R. C. R.—628-708) the commission said (p. 641):

"Since 1890 the company has earned a return on investment, in most cases, of from 5 to 8 per cent. The return for the entire period, on the first basis shown in the table, amounts to 5.4 per cent upon the investment and, on the second basis, the return is 6.45 per cent. * * *

"Attention should be called to the effect of excessive salaries upon the rate of return and consequently upon the apparent failure of the plant to reach a paying basis. The reports of the utility, for periods prior to the adoption of the uniform classification of accounts, did not separate salaries of general officers from other general expenses. For the past few years, however, it is clear that salaries have been so high as to appreciably affect the rate of return.

If this same condition has prevailed throughout the life of the utility, the nominal rates of return, as shown in the foregoing table, are lower than the actual rates."

On page 645 et seq., the commission said:

"There are two items of 'General Expenses' which are open to question, and which need revision. The first to be considered is that of 'Law expenses—general,' which is reported as $1055.95 for 1909 and $1502.50 for 1910."

1305 * * * "The amount reported as expended for 'salaries of general officers' appears excessive, although the excess is not as great as first appears to be the case. Salaries of superintendent and assistant superintendent have not been apportioned among the departments, and consequently the reported salaries of general officers are very much in excess of the amount which should have been reported under the heading. According to the statement of the superintendent, the salaries at present paid by the company, which are being reported as 'Salaries of general officers,' are as follows:

"Superintendent	$2,000	per year
Assistant Supt.	900	" "
President	2,400	" "
Secretary	1,200	" "
Treasurer	1,200	" "
Total	$7,700	per year

"No very definite statement could be secured as to the services performed by the president, the secretary, and the treasurer. Practically all of the active work of management is in the hands of the superintendent, by whom it appears to be very efficiently carried on. It was admittted that the president and the secretary devoted very little time to the management of the plant, acting only occasionally in an advisory capacity. The treasurer devotes more of his time to the business of the utility than either of the other general officers, but stated that only a small part of his time was actually taken up by the duties of his position. It was argued by the company in support of the salaries paid at present, that the time of the president is worth $25 per day. Without attempting to determine at this time whether or not this value is correct, it should be pointed out that the value of their time to the general officers themselves may be entirely different from its value to the utility. The value of a man's services and time to himself would ordinarily be judged by what he could dispose of them for, but the value to the utility must be judged by the results obtained. Even accepting the estimate of $25 per day as the value of the time of the president and allowing another $25 as the value of the services of the treasurer and the secretary, it is seen that an average of ninety-six days per year would have to be devoted to the utility in order for the officials to earn $4,800 per year. For limited periods the service of these officials

may be worth much more than $50 per day to the utility, but it is clear that ninety-six days per year *is* much more than the amount of time actually spent in the service of the company.

1306 "With an expenditure of $2,900 yer year for superintendence in a city of the size of Janesville, it would seem that not a great deal of the time of the general officers should be taken up in the active management of the plant. The amount which the utility shall pay to its general officers is a matter of policy which does not concern the public, but consumers have a very vital interest in the total return which the utility secures upon its investment. If the controlling stockholders choose to dispose of earnings in the form of large salaries, the minority stock holders may have interests involved, but as long as the total return on investment is reasonable, it is of no concern to the consumer whether earnings are disposed of in the form of salaries or in the form of dividends. The sole interest of consumers in this matter is, to be assured that the total rate of return is reasonable. Just as far as salaries of general officers exceed a reasonable and just compensation for the time and services of such officers, these salaries should be regarded as a portion of the return on investment. This line of reasoning has been followed by the board of gas and electric commissioners of Massachusetts. We quote from the decision of this board in regard to the petition against the Leominster Gas Light Company, on page 14 of its 25th Annual Report.

" 'In view of the intimate relation which the management and owners of this company sustain to each other, it may be claimed that the management, if it desires, may choose between profits and a high operating cost, and that only the stockholders are interested as to whether a certain amount of income is retained for dividends or expended for management. But even if the public be not interested in the apportionment of a given sum between dividend and management cost, yet they have clearly an interest when the combination of such costs is unreasonably large. While it is true that the earnings divided among the stockholders in recent years have been far below what is considered a fair return on capital, it must be remembered, that the fair return is not to be measured by the dividends declared, but by the amount to which the company is entitled under the circumstances.'

"In the case of Ross et al. v. Burkhardt Milling & El. Power Co. 5 W. R. C. R. 139, 152, this Commission said, in speaking of the general expenses of the respondent in that case:

" 'With respect to the "General expenses" the excess is due to the fact that the salary of the president has been placed at not far from $1,000 above the amount that appears to be warranted by the conditions. These conclusions are based on a detailed examination of the local conditions in this case, as well as upon facts disclosed by the examination of the facts and conditions that surround other plants that are similarly situated. Fairness seems to demand

1307 that, for the purposes of this case, these excesses should be eliminated from the expenses'.

"As outlined in this quotation, the amount which should be con-

sidered a reasonable expense for salaries must be determined by an examination of local conditions and by comparison with other plants which are similarly situated. It was pointed out above that the Janesville Water Company is paying $2,900 per year to a superintendent and his assistant. The plant has a well established business and pays salaries for superintendence sufficient to secure men who are thoroughly competent. Most of the duties of the general officers appear to consist of acting in an advisory capacity. All the local conditions point to the conclusion that salaries at present paid to general officers are greatly in excess of a fair amount. Although it makes no difference to the consumer whether a reduction is made in salaries or whether the reduction be in the amount to be returned in the form of dividends, consumers have a right to demand that the combination of salaries and interest shall not be unreasonable.

"Comparison with other plants in Wisconsin is made difficult by the fact that of the private plants operating in cities substantially comparable to Janesville, a number are under the same general management as the Janesville plant, and the excessive allowance for salaries appears to be very general. Due to the wide variation in salaries paid, it is not possible to fix a normal salary by comparative means, but all the facts point to the conclusion that salaries at present paid to the general officers of the Janesville Water Company are more than double what they should be. An allowance of $2,000 per year, instead of $4,800 appears to be sufficient. Whether or not an actual reduction of $2,800 per year should be made in salaries paid, makes no practical difference. The essential thing is, that the combination of salaries, which may be regarded as a form of return on investments, and dividends, should be reasonable."

In the Marinette (Wis.) case (8 W. R. C. R. 334-387) at page 362, the commission commented on the salaries of general officers, presenting a tabulation of the amounts so charged by the company during ten years. The amounts varied from $6,000 in 1901 to nothing in 1904. They aggregated $26,256.90 for the 10 years, averaging $2,625.69 per annum. The commission held that $2,000 1308 was sufficient allowance for that item. This property was, at that time, one of four Wisconsin water plants owned by the American Water Works & Guaranty Co., of Pittsburgh, Pa.

In the Green Bay (Wis.) case (11 W. R. C. R., at p. 255) the commission discussed executive salaries as follows:

"Petitioner calls attention to the fact that for a number of years the salaries of executive officers were very low, and that it is only recently that the company has paid very much in the way of salaries of general officers. It is stated by petitioner that the business of the utility is mostly handled by the superintendent and that no large allowance need be made for the salaries of other officers. The amounts reported under the head of salaries of general officers for 1911 and 1912, were $3,141.66 and $3,658.33, respectively. The testimony shows that a total of $2,500 is paid in salaries to the presi-

dent, treasurer, secretary and directors. It is a difficult matter to determine what are reasonable payments for such services as those rendered by the general officers and directors. It appears that a considerable part of the work done by such officials has to do with the management of the investment in the property and with such matters as improvements, extensions and replacements. It is undisputed that for a number of years the officers received very little in the way of direct payment for their services, but petitioner contends that this was offset by stock bonuses given to the officers. Respondent's stand upon this matter is that the services rendered by the officers are worth more to the utility than the amount of their salaries. It may be that a distinction should be made between what the services are worth to investors, who are thereby assured of an efficient management of their investment, and what they are worth to the utility, considered as an operating entity. That the services rendered by the officers have a value to the operating utility can hardly be questioned, and it does not appear that for a utility, such as respondent in this case, a payment of $2,500 per year for salaries of general officers is very far, if at all, above a proper amount."

Since Bluefield has about the same population as Janesville, or Manitowoc, or the average of the 16 cities shown in the tabula-
1309 tion herein, it is strongly evident from the showing now made that $9,600 for salaries of general officers of the Bluefield W. W. & I. Co. is excessive, and that about one third of that amount should be reasonable. $9,600.00 might not be unreasonable for salaries of general officers of a plant in a city of three times the size of Bluefield, where the plant and business were correspondingly large. There must be some relation between any item of expense and the magnitude of the business. No obvious reason is seen to justify a materially larger amount of expense in salaries of general officers in this case than is incurred by other utilities of like kind and size.

Another bit of evidence as to the proper level for salaries of officers and directors in this case comes to hand in the opinion of the Public Service Commission of Indiana in the case of City of Richmond v. Richmond City Water Works, decided June 20, 1914. The opinion presents a comparative statement of expenses of the plant for four years, classified. Under the heading "General Expenses" is an item "Salaries, officers and directors." The amount is $4,400 in each of the four years. The population of the city, as stated in the city's petition, is about 25,000 inhabitants. The value of the water works property, relative to which Mr. Alvord made a report and gave testimony, was placed by the Commission in that case at $750,000 while Mr. Alvord had placed it at $924,305 or 71% larger than that of the Bluefield property. If $4,400 is sufficient for the Richmond company's officers it should be more than sufficient in the present case.

Proportionate salaries for the Bluefield property, based on
1310 either the relative sizes of cities served or relative values of properties operated would be only $2,550 to $2,575 per an-

num. It is not claimed, however, that such amounts would be reasonably adequate for the present case.

Depreciation.

Another item of cost of service on which some difference of opinion exists is that of depreciation, or the amount which it will be necessary to set aside annually to accumulate, with its interest earnings, to take care of the renewals or replacements which from time to time become necessary for most of the features of the physical plant. Whatever the property amount may be, it is an element of the cost of the service which is separate from and independent of the other three elements, operating expenses, taxes and reasonable net earnings.

It is noted that Mr. Alvord's report on value of the company's property includes a depreciation estimate, based on an assumption as to the probable period of usefulness of each item, and the assumption that the amounts set aside annually to amortize the investment in each will earn 4% compound interest. The sum of the individual depreciation requirements of all the items of depreciable property is, according to Mr. Alvord's computations, $3,408. This is 0.631% of his estimate of the total value of the property. According to testimony, however, he would place the reasonable charge for depreciation at from 1% ($5,400) to 1¼% ($6,750).

1311 It should be observed that the calculated result ($3,408) is affected by the paving item to the extent of $60 in connection with mains and a further amount on services, and by what appear to be amply safe and conservative estimates of the periods of usefulness of the various items which will depreciate and may have to be replaced or abandoned; also, by what generally appear to be liberal estimates of the cost of reproduction.

The paving item does not, in view of the decision of the U. S. Supreme Court in the Des Moines Gas Case, belong in the property valuation, and therefore does not belong in the depreciation estimate, for, although the mains may, in time, require renewal, their renewal will not usually become imperative at some particular time involving cutting and replacement of long stretches of paving. Renewals of pipe lines will usually be made at times of paving renewals which are much more frequent.

The above mentioned calculated requirement of depreciation is materially affected by a question as to the probable period of usefulness of some of the items in connection with springs development. In case more of the springs ever become polluted and condemned for further use as sources of public water supply the investment in them should be amortized within that time. The probability of the pollution of those springs located high up on the mountain side is considered rather remote. It could not be shown that they will ever dry up without showing that rain will cease to fall onto or soak into the mountain. Pollution is the only real possible cause of

1312 their destruction, and even this cause is of doubtful consideration, for it appears that any other available waters are impure and would require artificial purification before they could be used.

The spring waters could also be so treated in case they become impure.

The tile pipe lines above the springs for collection of water and the cast iron pipe lines conveying the water down from them may fairly be said to be everlasting. They are not likely to decay, clog up, or become inadequate for the amount of water available from these sources. Additional sources may, and doubtless will, become necessary, but that would not seem to affect the usefulness of present sources. It is therefore considered doubtful that any depreciation allowance is really necessary in connection with the underground work of springs development.

The depreciation requirements of cast iron pipe mains in city streets are commonly figured on the basis of a useful life of 100 years as an average. Portions of them, particularly the smaller sizes, may in time, become too small and either parallel mains may have to be laid or larger mains substituted for them. Aside from this cause and the effects of stray electric currents there is practically no evidence of real depreciation of case iron pipe in any system. Some waters do cause an increasing deposit in the pipes which greatly reduces their original capacity, sometimes filling them completely, but this can be removed at much less than the cost of new mains of the same sizes.

1313 There is understood to be no incrustation or clogging of the pipes in the Bluefield system. Experience shows that electrolysis troubles, when present, can readily be mitigated to such an extent as to become negligible, by adoption of proper methods. The present extent of the effect of electrolysis in the Bluefield system if any, is unknown. If electrolysis of the water pipes is now going on, steps should at once be taken to mitigate and minimize it, or the durability of the pipes will be greatly lessened.

With the adoption of efficient methods of protection of the pipes from electrolysis and an apparent absence of any other cause of depreciation of cast iron pipe except the possible outgrowth of the capacities of some sections, it seems unlikely that 100 years is anything but a nominal and conservative estimate of the life of the case iron pipe in the Bluefield system. The city is hardly likely to continue its past rapid rate of growth indefinitely, hence the probability of very much of the cast iron pipe system becoming too small is rather remote.

The character of the construction of the Ada pumping station is such that it should last for at least a century, if not several centuries. Its period of usefulness will, however, like those of some other items of the property, depend upon possible developments which may require changes in the water supply such as to cause an earlier end of its usefulness.

Since estimates of depreciation requirements depend to a very considerable extent upon changes which bring about the end of

1314 usefulness of various features of a property before the are actually worn out physically, such estimates cannot possibly be of much accuracy, no matter when or by whom made. They must necessarily deal with the distant future which no human mind can foresee with certainty. Any depreciation estimate

is an attempt to forecast the future requirements for renewal and replacement of property which in one way or another will become useless. In a rapidly growing city many items of utility property are outgrown and rendered obsolete and inadequate in shorter periods than would be the case if the community growth were slower.

Depreciation requirements will depend upon or be affected by the interest earnings which can be credited to the annual appropriations made to the depreciation reserve fund. Four per cent compound interest is quite commonly assumed as reasonable, and this rate has been used by the engineering staff of the Railroad Commission of Wisconsin. It is the rate assumed by the writer as well as by Mr. Alvord in arriving at the depreciation of the various items of property in this case. There are, however, those who advocate the assumption of the same rate of earnings for the depreciation fund as is taken for the basis of proper net earnings of the business, on the ground that it is feasible and good policy to invest the depreciation funds in the extensions and improvements which owners of plants in growing communities are continually called upon to make, and that the investments in such extensions and improvements are entitled to the same rate of return as the previous investments. The writier was credibly informed that this position is taken by either the J.
1315 G. White Company or the Stone & Webster Company, but his recollection is not positive as to which of the two were so quoted.

A larger than 4% rate of earnings for the depreciation funds, if obtainable, will obviously reduce the annual requirements of principal additions. Conversely, if the average interest earnings of the annual appropriations to that fund cannot be made as large as 4% the annual appropriations as principal must be larger.

It will be noted that the company's accounts for the years 1905-'06-'07 show depreciation charged in only two of these years, aggregating $86.78. During the years 1908-1914 inclusive the amounts charged vary from a maximum of $9,076.36 in 1908 to a minimum of $4,317.29 in 1912. The total and annual average for these seven years appear to be, respectively, $45,813.77 and $6,544.82. This latter sum is almost double the result arrived at by Mr. Alvord in his computations. In the writer's opinion it is certainly much too large and materially affects the showing as to net earnings obtained for the owners of the property, just as do the high salaries of officers, and double office expense.

The writer's estimate of the annual depreciation requirements for the property as of January 1, 1915, based on the same estimated periods of total usefulness as were used in arriving at the valuation of the property, is $1,685.

If the above stated estimate of depreciation requirements is too low, due to overestimating the periods of usefulness of the several items, then it follows that the estimate of present value (cost of
1316 reproduction new less accrued depreciation) is too high, and a larger amount of accrued depreciation should have been deducted in arriving at a proper valuation. The corrections made in the writer's valuation as originally submitted are included in the

amounts on which the above stated estimate of annual depreciation requirements is based.

It is a fact that in comparison with the estimates of depreciation requirements of numerous other water plants the estimate in this case appears relatively low. There is some reason, however, why it should be so. There is in this case a relatively large amount of property considered as non-depreciable. According to Mr. Alvord's own depreciation estimate there is a total of $124,147 of non-depreciable property, which is 23% of his entire property value. There is a relatively large proportion of the total value in the company's lands, and there is a considerable proportion in the development of springs, concerning which any accrued depreciation is questionable. None was deducted by the writer for this property in arriving at the total present value and therefore no allowance for accruing depreciation is made in the estimate of total annual depreciation charges.

Admitting the uncertainty of accuracy in any estimate of future depreciation requirements, it is felt to be certain that Mr. Alvord's calculated result in reference to this matter is abundantly ample for this case if not already too high, and should not be doubled or increased in any other ratio merely because it appears low in comparison with similar estimates on other plants.

1317 The writer's estimate of the annual depreciation requirements ($1,685) was derived by first grouping the items of cost of reproduction new, according to the periods of usefulness estimated for the individual items, then by increasing the total cost for each group by 13%, to cover the overhead or general expenses pertaining to them (interest during construction, engineering & superintendence, etc.) then by finding and totaling the depreciation requirements of the separate groups. The useful life assigned to each item was, in most cases, shown in the writer's report on value of the property.

The group totals increased by 13%, the factors applied in determining their individual annual requirements as to principal, and the amounts so computed are shown in the table below.

Life of property in years.	Amount of property having this life increased by 13%.	Annual depreciation.	
		Factor.	Amount
10.....	1,244	.08329	103.61
20.....	3,112	.03358	104.50
25.....	34,945	.02401	839.08
30.....	11,102	.01783	197.95
35.....	2,197	.01358	29.84
40.....	1,872	.010524	19.70
50.....	7,018	.00655	45.97
60.....	21,540	.004202	90.51
75.....	64,392	.002228	143.47
100.....	136,529	.000808	110.32
Totals.....	283,951		1,684.90

1318 Comparative Costs of Water Service at Bluefield and at Other Places.

In making comparisons between rates or costs of service in different cities there are a number of very important possible differences in plants to take into consideration. Some of these differences in plants were pointed out by the writer in a paper entitled "The Individuality of Public Utilities," presented at the 34th Annual Convention of the American Water Works Association, at Philadelphia, 1914, and found in the Proceedings of that Association. (Copy appended hereto.)

While it is believed to be clear, from that paper, that no very definite conclusions as to proper rates for one plant can be drawn from consideration of those in effect elsewhere, nevertheless it is somewhat instructive to make certain comparisons in addition to those hereinbefore made regarding salaries.

Property Values.—At the writer's revised valuation of the property of the Bluefield Water Works & Improvement Company ($392,739) and a population of 14,500, the property represents a per capita value of about $27 while at Mr. Alvord's valuation it represents about $37.25 per capita. These figures, it must be remembered, include both tangible and intangible values, working capital being also included, and accrued depreciation has been deducted.

1319 The per capita values of 33 Wisconsin water plants referred to in the above mentioned paper are not strictly on the same basis, as they represent costs of reproduction new for the physical plant only, depreciation not being deducted nor intangible values and working capital added. Practically, however, they are on a fairly comparable basis. They would indicate a comparatively high cost for the Bluefield plant. Other things being equal, this fact alone would tend to justify comparatively high rates in Bluefield.

Water Furnished.—The average daily supply of water furnished at Bluefield (60 gallons) is comparatively low, and this fact also will tend to justify comparatively high rates, for it will be obvious that if the amount of water supplied by the same plant, as it is, were doubled the interest charges per unit of quantity would be halved. The low consumption of water in Bluefield compared with Wisconsin cities at large will be seen by reference to tables in the annual reports of the Railroad Commission of Wisconsin, particularly that on p. 476 of the Report for 1911. From that table it is easily ascertainable that the average consumption of water in the cities enumerated is very nearly 100 gallons per capita daily.

1320 Proportion of Company's Total Revenue Which Should Come from Public Hydrant Service.

By way of supplementing data and discussion given in the writer's previous report made in this case relative to the above subject, there is set forth below certain additional data taken from the decisions of the Railroad Commission of Wisconsin in water rate cases tending to show the proportions of total revenue which should come from the public at large for hydrant service according to the Commission's findings in those instances; also the proportions of plant value considered as chargeable to the public service.

Case involving w. wks. at—	Reference W. R. C. R. Vol.	P.	Total revenue to be provided.	Price fixed for hydrant service. Amount.	% of total revenue to be provided.	% of physical property charged to public hydt. service.
Ashland	4	273	54,318.73*	23,340	42.97	54.5
Ripon	5	1	12,923.36 (*a*)	6,082	47.06	65.22
Beloit	7	187	40,951	15,000	36.63	48.
Oconto	7	497	22,362.17 (*b*)	9,800	43.82	57.5
Janesville	7	628	38,724.14	15,800	40.8	53.5
Marinette	8	334	50,800 (*b*)	14,800	29.13	38.3
Beaver Dam	10	661	20,783	8,500	40.9	57.9
Green Bay	11	236	78,665	24,000	30.51	48.4
Ashland	14	1	68,353.70	24,300	35.55	45.
Ashland	14	721	(Rates fixed in above case arbitrarily reduced.)			
Hurley	14	291	6,860	2,800	40.81	53.
Jefferson	5	555	6,208.29	2,769.37	44.6	75. or more.
Madison	5	731	62,259.63	28,906.96	46.43	49.6
Darlington	6	26	See Note (*c*)	1,155	.....	....

*Actual present earnings, which are less than sufficient to provide a reasonable return on a reasonable valuation.
(*a*) Actual present earnings, unchanged for new rates.
(*b*) 7% net return basis.
(*c*) Rates rather arbitrarily made, due to lack of data.

Case involving w. wks. at—	Reference W. R. C. R. Vol.	P.	Total revenue to be provided.	Price fixed for hydrant service. Amount.	% of total revenue to be provided.	% of physical property charged to public hydt. service.
Tomahawk	8	40	6,050.52	2,539.66	41.97	58.
Eau Claire	9	134	38,072.57	15,000	39.4	48.5
Neenah	11	119	14,940	6,375.79	42.67	59.4
Evansville	11	197	4,812.75	2,500	51.94	64.1
Montfort	11	278	917.06	437	47.65	60.
Elkhart Lake	11	690	1,660	600	36.14	58.6
Elroy	14	485	5,612.62	1,500	26.73	45.
Sheboygan	14	634	69,176.23	27,500	39.75	46.
Watertown	14	669	23,394.37	8,465.25	36.18	47.5
Waterloo	15	534	3,972.37	1,500	37.76	60.

1322 The foregoing data shows that in all these cases the proportion of total revenues which should come from the public for hydrant service is less than the proportion of property value which is chargeable to that service. This will quite generally be true because of the public service portion of the operating expenses being less than its proportion of property value, on which basis the items of interest, taxes and depreciation are divided between public and private service.

Cost of Piecemeal Construction vs. Continuous Contract Work.

It has been claimed by Mr. Alvord, in testimony given in this case, that the writer's unit prices used in the valuation of the company's property appear to him (Mr. Alvord) to be on the basis of piecemeal construction, which Mr. Alvord says is less expensive than continuous contract work, under which latter plan the work is assumed to be all done continuously as one job.

This is the first time, so far as the writer is aware, of the making of a claim that piecemeal construction is less expensive than continuous construction.

In numerous cases before the Railroad Commission of Wisconsin, utility officials and expert witnesses employed by the utilities have claimed the reverse is true, and have claimed an additional allowance of 15% or more over the unit prices applied in the commission staff's valuations on the ground that the staff's unit prices were on the continuous contract construction basis, and on the
1323 further ground that the method of piecemeal construction, under which much of the properties were actually developed is more expensive, or less efficient.

In State Journal Printing Co. v. Madison Gas & Electric Co., (4 W. R. C. R. 546-549) the commission says:

"Respondent claimed a substantial allowance in the valuation by reason of the fact that it costs more to construct a plant by piecemeal than as one continuous piece of work, as would be the case under a general construction contract, and that the assumption in the valuation herein was continuous construction rather than piecemeal construction. Respondent's expert witnesses estimated that the additional cost of piecemeal construction over continuous construction would be not less than 15 per cent and respondent claimed an allowance of $143,455 to reproduction cost, or $116,291 to present value on this account.

"The engineer of the Commission stated at the hearing, and in his revised statement of valuation, that the inventory valuation was sufficiently high to cover this alleged extra cost by reason of piecemeal construction. In making the valuation each item had been taken separately, as though purchased in open market, and no consideration was had of the fact that the company or contractor would secure special figures in purchasing larger quantities of the material, equipment and labor. Actual conditions of construction had been liberally represented. While an added cost of piecemeal construc-

tion over continuous construction was recognized by the engineer, due to the embarrassment necessitated by maintaining continuous operation of the plant, the engineer maintained that there would be none with respect to a large part of the plant in this case.

"In cases, if any, where the average figures taken for cost and installation were insufficient to cover contingent cost, arising through the necessity of maintaining uninterrupted operation of the plant, the engineer stated that such contingent cost would be covered in the allowance for contingencies. He also stated that the appraisal doubtless contained some figures that are lower than the actual cost to the company, as well as other figures that are greater than the actual cost to the company. There are very likely to be variations in both directions, but it is more than likely that these variations will offset each other. The cost of piecemeal construction was given further careful consideration and investigation by the staff of the Commission, and the chief engineer, in connection with the revised valuation, made the following statement:

1324 " 'We have very recently had under consideration the relationship of cost of reproducing such properties as are involved in this case on a basis of continuous construction as contrasted with the so-called piecemeal basis. As a result of these further studies, it now appears that our valuation, as made under entirely normal conditions, give- results somewhat in excess of actual costs under the contract or continuous construction system. We therefore feel that there is sufficient margin between the results obtained by our established method of valuing such properties and those on the strict contract basis to warrant the statement made by the Commission's engineer at the recent hearing to the effect that our revised figures, when fairly interpreted as to final results, are essentially those which would be obtained by using the so-called piecemeal or actual cost basis. In the light of the foregoing conclusion we feel that there would be no justification for an increase in our revised figures to cover the alleged excess of cost due to piecemeal construction.'

"That the construction cost of a plant built up piecemeal during a considerable number of years would be greater than the cost under one contract or as a continuous operation, is a proposition in this case supported by testimony from all the engineers and experts of the respondent. Nor was the truth of this general proposition seriously attacked either by witnesses offered by plaintiffs or by the engineer of the Commission, who simply held that this element had been taken into consideration by him in the selection of the units of cost upon which the total cost of the plant *were* computed, and was therefore included in the totals.

"Among the elements of additional cost of piecemeal over continuous construction were mentioned the advantage that could be gained in buying materials in large quantities for continuous construction over small purchases as in piecemeal construction, the economy of laborers' time in continuous construction over piecemeal construction, in which latter case much time would be lost in

traveling from one small construction job to another, the large expense of maintaining continuous operation of the plant during piecemeal construction as contrasted with continuous construction, also an element of value arising from the fact that one might be willing to pay more for a plant that was completed and ready for operation and not have to take the risk of additional expense arising out of contingencies, this value being the premium for insurance on the business capacity and ability of the engineers and others connected with the project. The extent of this additional
1325 cost of piecemeal construction was estimated by one witness as being in some cases 100 per cent over what continuous construction would cost, but, as stated, it was the opinion of three of the respondent's witnesses that an allowance of 15 per cent would be sufficient on this account. The testimony leaned to the conclusion that, whatever additional cost arose from piecemeal as contrasted with continuous construction, should be put in with the tangible value, as it is as much a part of the physical cost of the plant as if the cost of a machine, building or other tangible item.

"That ordinarily the price is relatively greater for small than for large purchases, and that a small piece of work usually costs relatively more than a large piece of work or construction, are generally recognized facts. In computing the cost of a public utility, however, these are matters that can easily be adjusted or allowed for in fixing the cost per unit of the various elements entering into the cost of construction. As a rule the original part of a utility is built in one continuous operation and should be mostly classed under large scale construction. The various extensions, however, that are subsequently added to the plants in growing cities, are mostly of smaller proportions when taken separately, and will, therefore, generally come under piecemeal construction. In appraising utilities which have been constructed on this basis, the problem seems to be to find units of cost that represent a fair average of these conditions. To find such units appears to be practicable. In fact, it would seem that the extra costs of piecemeal construction can be more readily and accurately taken into account in this manner than by an arbitrary allowance of a lump sum to be added to a cost that has originally been computed upon the basis of continuous construction. At any rate, it is the practice of the engineers of this Commission to allow for piecemeal construction in the manner indicated, and this method, upon investigation, appears to us to be sound and to have led to reasonably fair and accurate results in both the present case and in other similar cases.

"The increase in the cost of operation of a plant during the period while new extensions are under construction, is perhaps not a serious matter, as an analysis of the conditions indicates that it can occur only while the new extensions are actually being connected with the plant. Nevertheless, some consideration has been given to this item. The element of value arising from the fact that one might be willing to pay more for a completed plant than for one
1326 not as yet completed, because risks and contingencies involved in construction are probably elements which, if they

enter into the value of a plant at all, should be considered in a different connection from the additional cost under consideration at this point.

"While there are conditions which tend to increase the cost under piecemeal construction, there also appear to be certain factors which may have the opposite effect. Extensions to such plants as those in question here are often of such nature that their cost during the construction period is met out of current receipts or funds on hand in such a way that little or nothing in the way of interest charges is in reality incurred until the extensions are in operation and financed in the usual manner. Again, the planning and supervision of the work of such extensions is often, if not always, performed by the regular officers and employes of the company without any increase in their salaries or wages. The entire amount of such supervisory cost is usually charged to the operating expenses, and this tends materially to reduce the cost of engineering and supervision of these extensions. These and similar economies, often practicable under the conditions described, are not without significance in passing upon the cost of piecemeal construction and may go far in offsetting many of the factors which usually make piecemeal construction relatively the most costly."

The same subject is further discussed by the same Commission in "City of Beloit v. Beloit Water, Gas & Electric Co.," 7 W. R. C. R., 240-241. In this case the Commission says: "Respondent would add from 10 to 15 per cent to the valuation of the physical property by reason of the fact that continuous contract construction is, on the whole, much less expensive than piecemeal construction. This claim is based largely upon the assumption that the appraisal made in this instance was based on continuous construction costs."

1327 What is the fact, as to which is more costly? Metcalf & Eddy, Consulting Engineers to the Boston Finance Commission, made a report covering the results of an extensive investigation of city affairs which throws some light on the question. Tables and diagrams presented by them in that report show the approximate effect of length of the job (pipe-laying) upon cost per foot. They show that the increased cost per foot of a piece of work 100 ft. long, over what it would have been if 1,000 ft. long, is 90 per cent. The increased cost for a 200-ft. job is 55 per cent; for 300 ft., 34 per cent; for 400 ft., 21½ per cent; for 500 ft., 13 per cent; and for 600 ft., 8 per cent. (See Engineering & Contracting of Aug. 18, 1909, or Gillette's Handbook of Cost Data, 2nd Edition, 1910, p. 663, or original report by Metcalf & Eddy.)

The conclusion to be drawn from above consideration is that if the unit prices applied by the writer in the valuation made in this case are in line with the actual costs of the company's piecemeal pipe extension work they are adequate for a duplication of the system under a continuous construction plant.

1328 *The Individuality of Public Utilities, Notably Water Works.*

By W. E. Miller.

Paper Offered for Program of 34th Annual Convention American Water Works Association, Philadelphia, May 11-15, 1914.

The fact that there has been a popular tendency in the past to measure the reasonableness of rates of one public utility plant, or even to fix rates for a new plant, by a comparison of those in force in other cities seems to warrant a little consideration of the differences between various plants of like kind and between the conditions under which they are constructed and operated. These differences seem generally far from being fully appreciated except by the comparatively few who have had something to do with a considerable number of such properties and had occasion to make comparisons between them.

The popular comparison of rates of different water or other utility plants appears to be merely a superficial one, due to the lack of knowledge and appreciation of the great differences that may exist even in cities of similar size.

Certain water works franchises have specified that the rates to be charged by the grantees under those franchises should not exceed the average of those in certain other cities named therein.

Those who have had experience in construction and valuation of railroad property, and doubtless others as well, are aware of the existence of a wide range of values per mile of roadbed or track, which are the common bases of comparison of different roads. The heavier types of construction on heavy traffic roads is by no means the only cause of the differences in costs or values per mile. Construction difficulties may be relatively so serious in the case of a so-called small road, or light traffic road, as to offset the extra expenses for stiffer construction in the cases of certain higher class lines. These relative construction difficulties may, in other cases, operate to augment, instead of to offset, the differences in cost that are due merely to construction standards. Topography and geology of the country traversed are important factors in the results.

1329 In the field of waterworks construction there are many different factors and combinations of them which enter into the costs of plants. The mere costs of prospecting for and developing water supplies for relatively small communities have often been relatively, if not actually greater than in the cases of much large cities, particularly so when the losses involved in necessary changes from one source to another, if not to a third and even a fourth source, are considered.

Topography and geology are factors as influential in the costs of water plants as they are in railroads. Even climate is an important consideration since it affects the depths at which mains and services are to be laid and the character of other features. One does not have to travel very far in certain sections to find standard trench

depths differing quite remarkably. For example, at Chippewa Falls, in the west central part of Wisconsin, the franchise granted to the water company required a depth of nine feet of cover, which involved cutting into a considerable amount of solid rock. At Hurley, on the north line of Wisconsin, and Ironwood, in upper Michigan, the water mains are laid in a trench only five feet deep and it is understood that very little, if any trouble through freezing of mains has occurred. Heavy snows covering throughout the winter is given as the reason for the comparatively shallow penetration of frost in those places.

Milwaukee's specifications for pipe laying call for a depth of 6½ feet to the center of pipe.

Within the state of Wisconsin alone the standard depths of cover on water mains in different cities have been found to range from 4½ feet to 9 feet.

It seems needless to say that the character of material to be excavated and the cost of excavating it have also varied between wide limits, covering everything from a merely damp loamy sand, requiring no use of picks, sheet piling or pumps, to solid rock, involving drilling and blasting, or to wet sand and gravel requiring tight sheathing and much pumping.

Conditions very favorable to low cost of pipe-laying predominate in some cities while in others the work is very difficult almost throughout. One small city in Wisconsin within the writer's knowledge has found it impracticable to finance the construction of a water works solely because of the fact that the pipe-laying would involve the expense of almost continuous excavation of solid rock.

In discussing the distribution system, which forms so large a part of the cost of every water works plant, it is also of interest to note how various plants differ as to average size of pipe in mains. This, as well as the cost of laying, materially affects the total investment. Some water pipe systems contain a considerable proportion of small wrought iron and steel pipe, ranging from ¾″ to 3″ running longitudinally with the streets and classed as mains, although serving only private consumers, while other cities have nothing smaller than 4″ or even 6″ pipe.

1330 Below is a tabulation for a number of Wisconsin water plants, showing for each case the population by 1910 census, the total mileage of mains and the average pipe diameter. The average size was determined by multiplying each diameter by the length of that size and dividing the sum of those products by the total length of all sizes.

TABLE 1.

Class A Plants.

Private Ownership:

Place.	Population.	Miles of mains.	Average diameter, inches.
Ashland	11,594	30.70	6.87
Beloit	15,125	27.55	6.38
Chippewa Falls	8,893		
Green Bay	25,236	96.74	4.13
Janesville	13,894	32.55	5.60
Marinette	14,610	33.66	5.22
Merrill	8,689	19.92	5.49
Oshkosh	33,062	60.34	6.23
Racine	38,002	76.43	7.06
Superior	40,384	61.82	7.95

Municipal:

Appleton	16,773	All Sizes 29.72	5.57
		C. I. only 22.62	6.79
Eau Claire	Pipe data not available.		
Fond du Lac	18,797	33.82	5.81
Kenosha	21,371	41.93	6.12
La Crosse	30,417	63.97	8.22
Madison	25,531	51.13	5.18
Manitowoc	13,027	24.63	6.91
Milwaukee	373,857	499.00	8.61
Sheboygan	26,398	68.50	5.69
Watertown	8,829	20.59	6.46
Waukesha	8,740	25.86	6.70
Wausau	16,560	31.92	5.33

Class B Plants.

Private:

Antigo	7,196	13.97	5.46
Beaver Dam	6,758	16.67	6.17
Mellen	1,833	3.68	6.30
Menomonie	5,036	10.91	5.65
Oconto	5,629	14.48	5.28

1331 Private:

Ripon	3,739	11.63	5.92
Stevens Point	8,692	16.04	6.09
Washburn	3,830	All sizes 8.43	5.50
		4" & larger 6.67	6.55
Whitewater	3,224	8.76	6.83

Place.	Population.	Miles of mains.	Average diameter, inches.
Municipal:			
Baraboo	6,324	14.36	6.20
Berlin	4,636	9.58	6.57
Columbus	2,523	6.86	5.51
Edgerton	2,513	6.52	5.69
Fort Atkinson	3,877	4" & larger 8.78 All sizes 10.38	5.20 4.90
Grand Rapids	6,521	16.65	5.26
Hudson	2,810	8.78	4.69
Kaukauna	4,717	10.46	6.88
Lake Geneva	3,079	7.72	5.89
Lancaster	2,329	8.59	4.44
Marshfield	5,783	8.99	7.72
Menasha	6,081	13.29	7.87
Monroe	4,410	8.98	5.39
Neenah	5,734	13.75	6.53
New Richmond	1,988	3.22	5.63
New London	3,383	5.87	5.70
Platteville	4,452	14.65	4.75
Portage	5,440	18.37	4.24
Port Washington	3,792	7.17	6.40
Rhinelander	5,637	15.28	5.92
Rice Lake	3,968	9.76	4.73
Richland Center	2,652	7.68	5.05
River Falls	1,991	5.16	5.65
Shawano	2,923	5.94	5.36
South Milwaukee	6,092	7.72	6.17
Sparta	3,973	12.95	4.93
Stoughton	4,761	13.37	4.43
Sturgeon Bay	4,262	1.84	9.43
Tomah	3,419	7.63	4.74
Tomahawk	2,907	5.31	5.49
Two Rivers	4,850	10.05	4.61
Waupun	2,789	9.71	5.27
West Allis	6,645	27.9	6.55
Oconomowoc	3,054	8.74	6.88
Plymouth	3,094	9.83	1.89

In addition to the foregoing, the following similar statistics for certain water plants outside of Wisconsin are available.

1332

Place.	Population.	Miles of pipe.	Average diameter.
Chicago, Ill.	2,185,283 (1910)	2,362 (1911)	8.62"
Indianapolis, Ind.	233,650 (1910)	364.1 (1914)	8.28
Charleston, W. Va.	32,000 (Est. 1914)	52.37 (Jan. 1, 1914)	4.46
Pensylvania Water Co. Wilkinsburg, Pa.	.....	146.9 (1910)	8.78

The foregoing figures were, in most cases, compiled from statistics furnished by the plants for the year ending June 30, 1913. In a few instances statistics on pipe mileage for that year were not available and those of somewhat earlier dates were used, being taken from inventories and valuations.

In those cases where much pipe smaller than 4" is used it is evident that the fire service is either not coextensive with the pipe system or it is of a lower order of excellence than in those cases where no such small pipe is found.

The question sometimes arises as to how marked is the tendency for the average diameter of distribution mains of a water plant to increase with the total mileage or with the population of the cities supplied. In order to most clearly show that tendency so far as the foregoing figures indicate its existence those values have been put in graphical form as shown by the diagrams fig. 1 and fig. 2. The former shows the various cities arranged in the order of magnitude of their population, the second in the order of total pipe mileage.

The great diversity of average pipe diameters can hardly be fully accounted for by differences in local conditions alone but are doubtless due in large measure to differences in personal ideas of those who have had to do with the development of these systems. It is also to be remembered that these several plants will certainly not show the same degree of adequacy under their respective sets of operating conditions and requirements. They are all, doubtless, fully adequate for the ordinary daily commercial service, but the capacity for good direct pressure fire service in addition is low in those cities where average pipe diameters are small. In two cities of similar size and having very similar pipe systems the fire service will be poorer in that one using the greater amount of water in the general commercial service.

It can scarcely be contended that the diagrams figs. 1 and 2, establish the existence of a tendency for the average diameter of mains in a system to increase as the mileage increases or as the city grows in population. The developments of single or individual systems would be much more reliable indications of the natural changes in average pipe sizes, as the great diversity of ideas of those in charge of extensions of various systems and the great diversity of other local conditions would largely be eliminated.

1333 Figure 3 shows the change in average pipe diameter with increase in total mileage in two water pipe systems in Wisconsin, those of Madison and Milwaukee.

In order to indicate the approximate effect of difference in average pipe diameter upon the average cost per foot of all mains in a system, the diagram fig. 4 has been prepared from unit prices used in 1911 valuation of the Milwaukee Water Works. That valuation was made by the engineering staff of the railroad commission of Wisconsin for the commission's use in determining equitable rates. The diagram shows values per foot of mains including material and labor costs. These unit values are, of course, not applicable in valuation of other pipe systems where conditions are different. The diagram

merely indicates approximate relative unit values on different sizes, or average sizes, under certain specific conditions.

Were all conditions except average pipe diameter similar in Madison and Milwaukee, figs. 3 and 4 would indicate that the cost of the Milwaukee system per mile or per foot would exceed that of Madison by about 60%.

Among the numerous factors entering into the problem of the pipe system and into the differences existing between the several systems named above, both as to average diameter and cost per foot or other unit of length, are:

1. Depth of cover required to prevent freezing.
2. Character of soil as regards difficulty of excavating it.
3. Rates of cost for materials and labor.
4. Average and maximum present rates of demand of private service.
5. Provision or lack of provision of a temporary surplus of capacity to take care of future extensions into new territory.
6. Provision for increased demand in existing territory.
7. Provision for reduced carrying capacity by incrustation or tuberculation.
8. Character of fire service to be provided.
9. Location of pumping plant with respect to center of distribution.
10. Permissible total loss of head by friction (affected by topography of territory) etc.

A little reflection on the number of factors that affect the design, development and cost of a water pipe system, and on the range of values any one factor may have in different cases shows that it is but natural for such systems to possess decided individuality.

The entire distribution system of a public water works property often represents two thirds or even a greater proportion of the total plant value, yet in a number of cases it falls to materially less than one half the total. Such differences are, in part, due to lack of uniformity in the matter of ownership of service pipes and meters, these being generally counted as parts of the distribution system in cases where they are installed by and at the expense of the water works, instead of by property owners or tenants, as is the custom in some cities.

1334 While the foregoing and other facts show that very little is to be gained by merely comparing total water plant investments or valuations in different cases on any basis, it is considered of some interest to note how such total values do vary.

Thirty-three of the Wisconsin water works plants of which physical valuations have been made by the engineering staff of the railroad commission of Wisconsin for the commission's use and consideration in rate or purchase cases compare as follows on the "per capita" basis:

2	Plants	showed	values*	between	$14.70	and	$15.00
14	"	"	"	"	15.00	"	20.00
10	"	"	"	"	20.00	"	25.00
4	"	"	"	"	25.00	"	30.00
2	"	"	"	"	30.00	"	35.00
0	"	"	"	"	35.00	"	40.00
1	"	"	a maximum of		40.96		
33	"	"	an average of		$21.34		

*Cost of reproduction new, except paving, for tangible, physical property only.

The same plants compared on the basis of total physical valuation per service connection show the following relative amounts:

2	Plants	had	values	between	$75.00	and	$100.00
12	"	"	"	"	100.00	"	150.00
10	"	"	"	"	150.00	"	200.00
5	"	"	"	"	200.00	"	250.00
4	"	"	"	"	250.00	"	300.00
33	"	averaged					$171.91
22	"	in the largest groups averaged					$146.95

When compared on the investment per million gallons pumped during a year these plants appeared as follows:

5	Plants	furnished	no pumping statistics.				
3	"	had	values	between	$380	and	$400
4	"	"	"	"	400	"	500
9	"	"	"	"	600	"	703
5	"	"	"	"	800	"	1,000
6	"	"	"	"	1,000	"	1,300
1	"	"	maximum value of		$6,028		

On this basis of comparison it is seen that the capital charges for each million gallons of water pumped, if computed at the same rate for all, were almost 16 times as much in the highest case as in the lowest.

1335 The valuations to which reference has been made herein were not the final and official valuations fixed by the commission on the utilities as going concerns but included merely the physical property. The fact that the difference between the two is often quite considerable appears to be far from being generally realized.

Not only do public utilities vary widely as to comparative costs or values but they serve communities having decided pecularities and individualities of their own. Great differences are found in the average wealth of the inhabitants of various cities, in the extent and character of the industries located therein, in the topography and

geology of the land on which they are built and in other aspects. All these decisively affect the demands on the utilities and therefore their operating expenses, and necessary rates.

A comparison of the pumping expenses alone of 17 of the larger Wisconsin water plants, excluding Milwaukee, showed a range of from $10.38 to $32.32 per million gallons during the year ending June 30, 1913. The head pumped against, not including suction lift, varied from 100 feet to about 230 feet. There was apparently but little relation between the pumping pressure and the cost per million gallons pumped. Some of the plants in Wisconsin pump against a domestic pressure of as low as 70 feet head while just across the state line is one (in Duluth) which raises water (in three lifts) from Lake Superior to an elevation of about 900 feet.

The extra expenses of pumping the same water twice, once from deep wells to a low reservoir or from a lake or stream to a purification plant, then to the city mains and the expenses of purification are material elements in the total cost of service of some plants and are not present in that of others.

Some plants are found to be furnishing service to substantially all, and others to less than half of the inhabitants of their respective communities. Even if all cities were built equally compact, this variation in proportions of population served would materially affect the number of consumers per mile of mains, or, in other words, the number of feet of mains for each consumer in the cases of different utilities.

Most cities show some growth. In certain cases this has been positive, permanent and rapid; in others it has ben very slow, even to a negative growth or reduction. Rapidity of community growth affects the depreciation accruing to the utility through obsolescence and inadequacy, causing replacements and enlargements before existing facilities have become worn out.

One of the very important differences between the rates of various water utilities is in the manner in which the total expense has been divided between the public and the private service. By the public service is meant that included in the hydrant rentals. By private service is meant all the remainder, which is sometimes designated as the general service and subdivided into classes termed domestic, commercial and industrial service.

1336

Until a very few years ago the determination of hydrant rentals seems to have rarely, if ever, been put upon a scientific and equitable basis. Such charges were generally, if not always, fixed by a process of bargaining between municipal authorities and the owners or managers of the utilities. The latter naturally got what they could of their total revenues in the form of hydrant rentals and endeavored to spread the balance of the total expense of operation and fixed charges over the general service.

There is probably no need of reproducing here any of the abundant published data showing how greatly the hydrant rentals have varied in different cities. That such great differences exist seems to be quite widely known. Obviously, if a water works is to have a fair and proper gross income, it must make up from the private

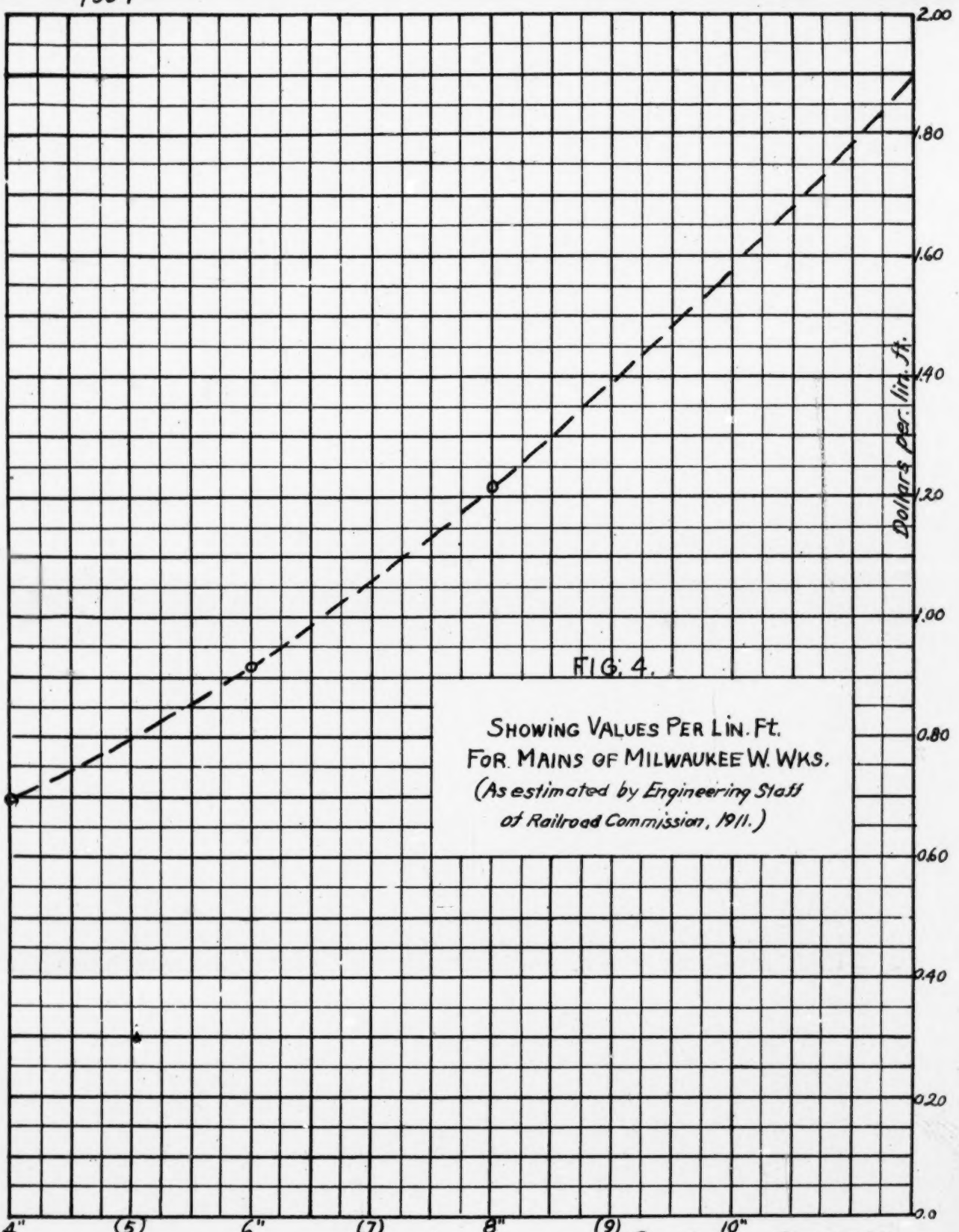

FIG. 4.

SHOWING VALUES PER LIN. FT.
FOR MAINS OF MILWAUKEE W. WKS.
(As estimated by Engineering Staff
of Railroad Commission, 1911.)

FIG 3.

SHOWING CHANGES IN AVERAGE DIAMETERS OF WATER MAINS IN MILWAUKEE & MADISON, WIS. WITH INCREASE IN MILEAGE

Average Diameter of Mains, in Inches

0 1 2 3 4 5 6 7 8 9

MILES OF MAINS.

0 50 100 150 200 250 300

0 5 10 15 20 25 30

NOTE :- Use upper mileage scale for Madison, lower scale for Milwaukee

Milwaukee (Original Construction in 1874)

Madison (Original Construction in 1882)

1890 1885 1880 1875 1870 1865 1860

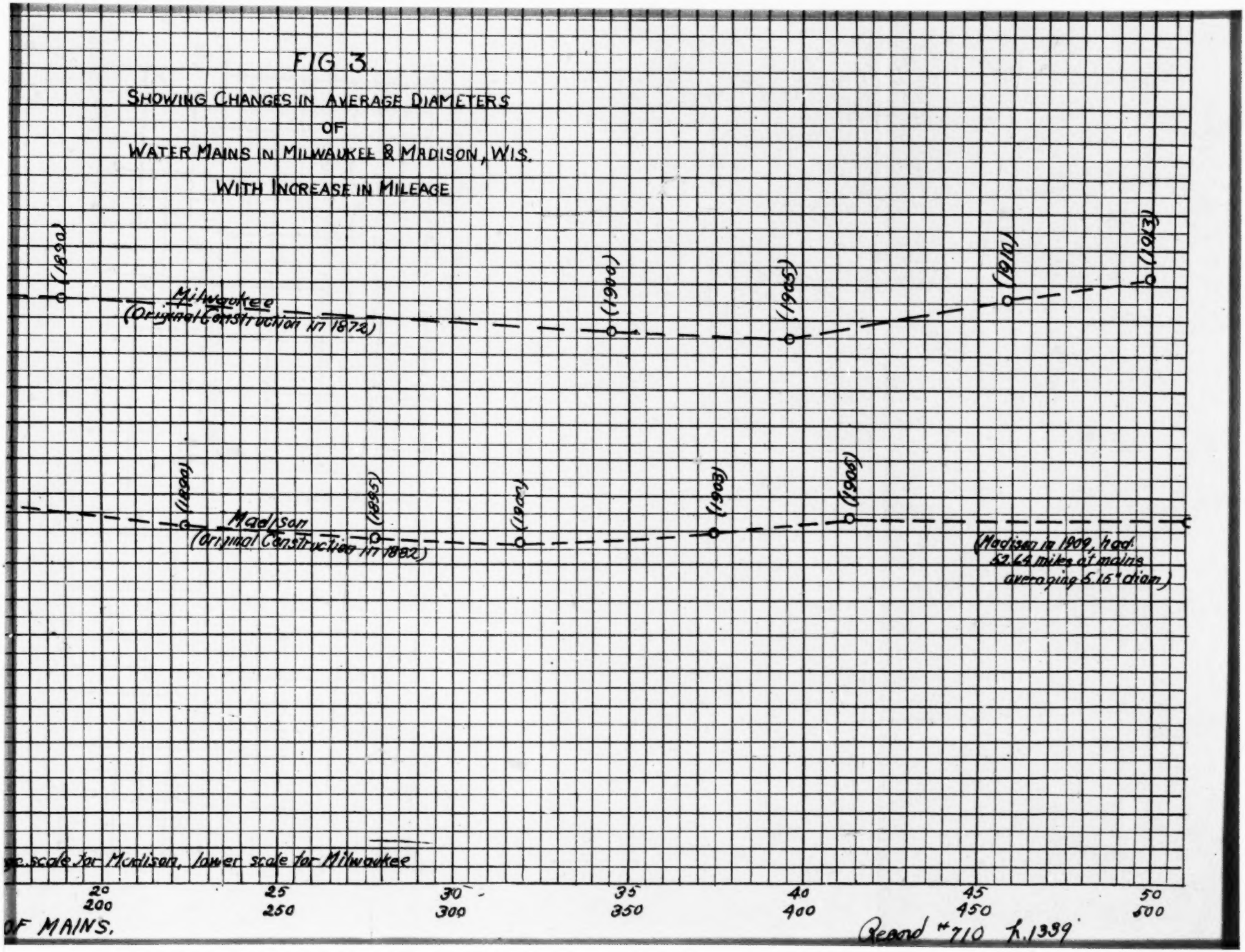
FIG 3.
SHOWING CHANGES IN AVERAGE DIAMETERS
OF
WATER MAINS IN MILWAUKEE & MADISON, WIS.
WITH INCREASE IN MILEAGE
(1890)
Milwaukee
(Original Construction in 1872)
(1900)
(1905)
(1910)
(1913)
(1890)
Madison
(Original Construction in 1882)
(1895)
(1900)
(1903)
(1906)
(Madison in 1909, had 52.64 miles of mains averaging 5.15" diam.)
...e scale for Madison, lower scale for Milwaukee
20 200
25 250
30 300
35 350
40 400
45 450
50 500
...OF MAINS.
Record #710 p.1339

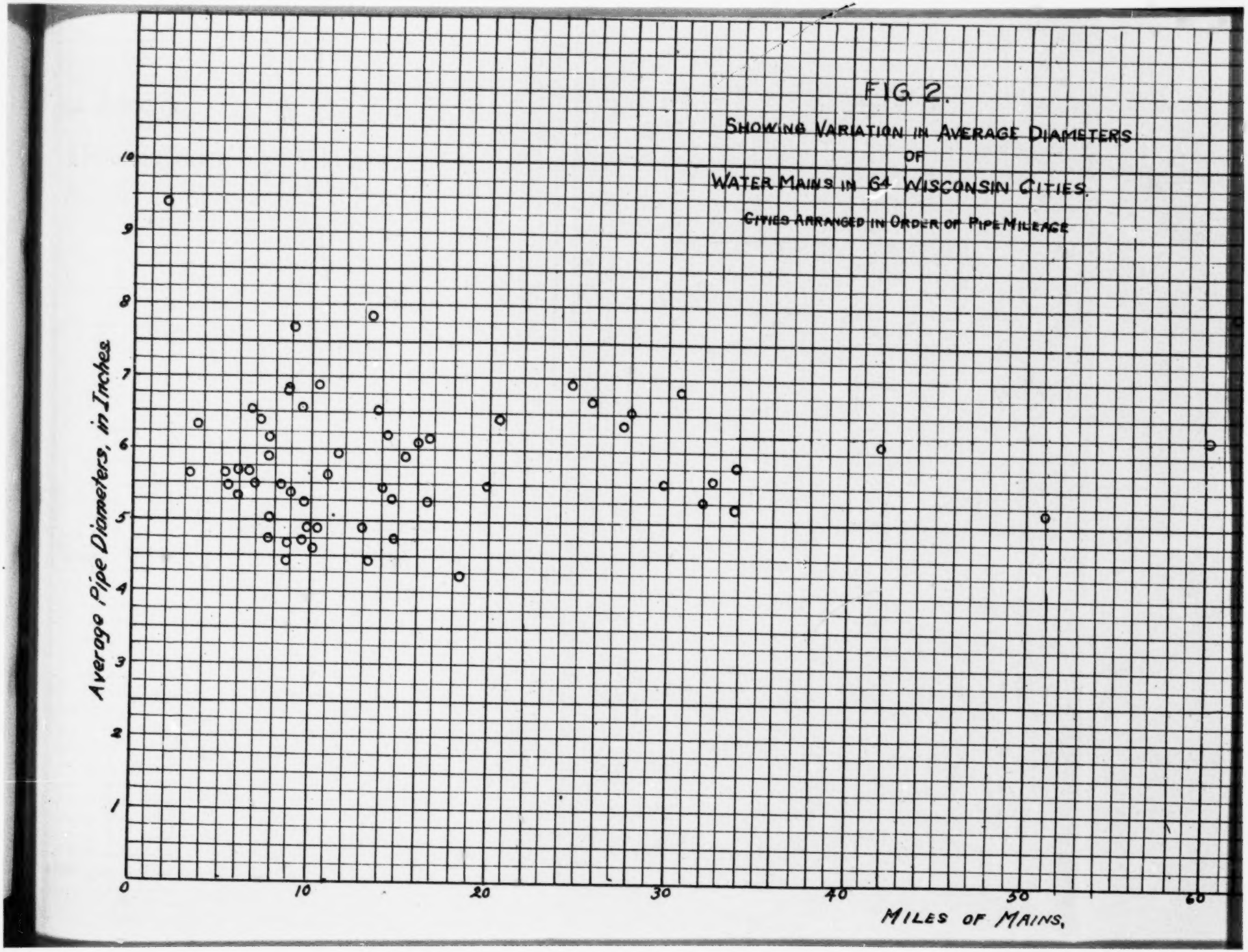
FIG. 2.
SHOWING VARIATION IN AVERAGE DIAMETERS
OF
WATER MAINS IN 64 WISCONSIN CITIES.
CITIES ARRANGED IN ORDER OF PIPE MILEAGE
Average Pipe Diameters, in Inches
0
1
2
3
4
5
6
7
8
9
10
0
10
20
30
40
50
60
MILES OF MAINS.

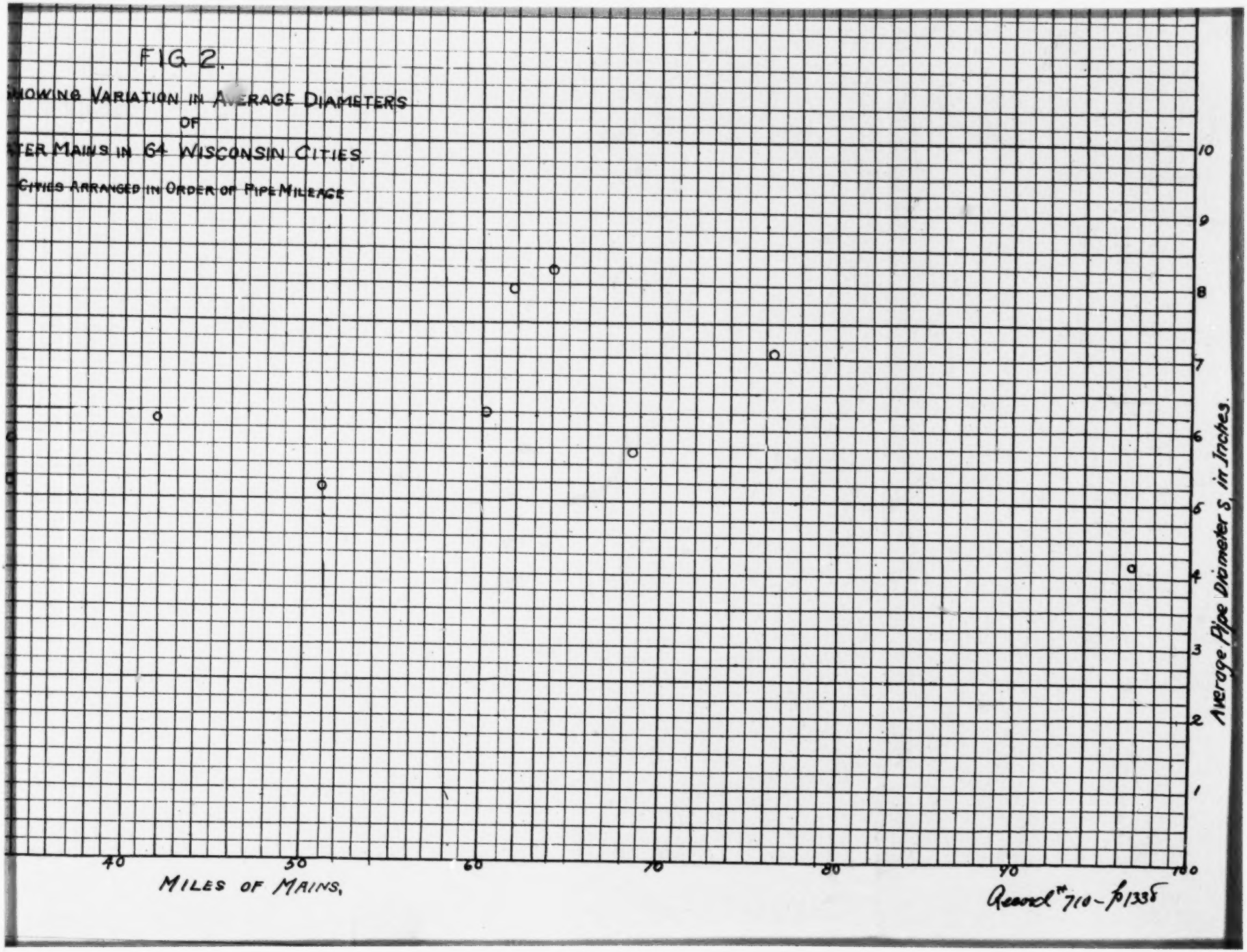
FIG. 2.
SHOWING VARIATION IN AVERAGE DIAMETERS
OF
WATER MAINS IN 64 WISCONSIN CITIES.
CITIES ARRANGED IN ORDER OF PIPE MILEAGE
Average Pipe Diameters, in Inches.
1
2
3
4
5
6
7
8
9
10
40
50
60
70
80
90
100
MILES OF MAINS.
Record No 710 - p 1338

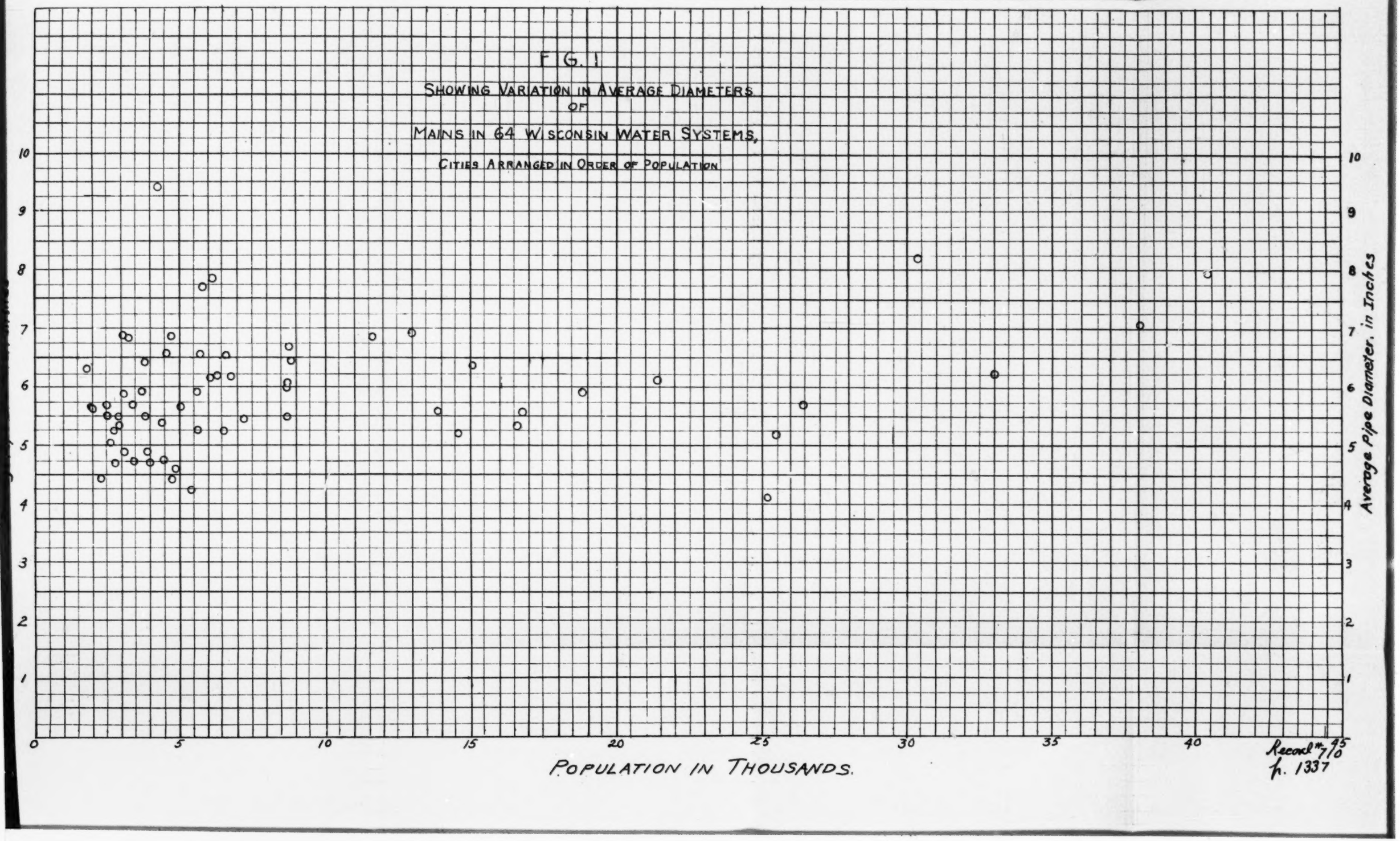
FIG. 1
SHOWING VARIATION IN AVERAGE DIAMETERS
OF
MAINS IN 64 WISCONSIN WATER SYSTEMS,
CITIES ARRANGED IN ORDER OF POPULATION
Average Pipe Diameter, in Inches
POPULATION IN THOUSANDS.
Record No. 710
p. 1337

consumers, or water takers, whatever amount of fair revenue it fails to get in return for its municipal hydrant service. Rates for the former are clearly dependent in part upon whether or not the latter service yields its just proportion of the total expense.

These and numerous other considerations which might be mentioned, all demonstrate quite clearly that every water plant at least, if not every public utility, has its own peculiarities and individuality. The best interests of both the utility and the public it serves, demand that it be considered separately and independently of all others, except perhaps when all the differences in local conditions are fully understood and due allowances are made therefor. The law of averages has its uses but it certainly is not applicable in determining reasonable rates for one plant by those of others.

In making comparisons between various water plants, for example, it is to be remembered that the statistics of each plant are continually changing and in some cases much more rapidly than others. At any given time the business of each plant in any list that may be taken is in a particular stage of its development and that of each plant is likely to be quite different from all the others. In the writer's judgment these considerations all demonstrate quite clearly that each plant is to be considered upon its own particular conditions and merits as a special case having decided individuality.

(Here follow blue prints marked pages 1337, 1338, 1339, and 1339*a*.)

1339*b* Bulletin No. 31

The Public Service Commission of West Virginia.

Case No. 59. Formal Complaint No. 58.

CITY OF BLUEFIELD

vs.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY

and

(Case No. 368.)

In re BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY.

Application for Authority to Increase Rates, Tolls, and Charges for Water.

Submitted February 25, 1917. Decided April 24, 1917.

Report of the Commission.

E. F. Morgan,
Chairman;
E. G. Rider,
Geo. R. C. Wiles,
Commissioners.
R. B. Bernheim,
Secretary.

Charleston.

1340 Case No. 59. Formal Complaint No. 58.

CITY OF BLUEFIELD

vs.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY

and

(Case No. 368.)

In re BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY.

Application for Authority to Increase Rates, Tolls, and Charges for Water.

Submitted February 25, 1917. Decided April 24, 1917.

Formal complaint of the City of Bluefield against the Bluefield Water Works & Improvement Company because of a rule requiring

consumers to install and to maintain service lines; because of certain charges for cutting water off; because of inadequate service for fire protection; and because of unsanitary conditions of water furnished; granted in part.

Petition of the Bluefield Water Works & Improvement Company for permission to increase its rates for water; granted in part.

Appearances: H. A. Ritz, D. E. French and J. R. Dillard for the City of Bluefield; J. H. Gaines, A. G. Fox and Sanders & Crockett for the Bluefield Water Works & Improvement Company.

RIDER, *Commissioner:*

The City of Bluefield on the 18th day of August, 1914, filed its formal complaint, duly verified, against the Bluefield Water Works & Improvement Company, in which it claimed its citizens, the consumers of water, were aggrieved by reason of the enforcement of a rule by the defendant company requiring said consumers of water to pay for the installation of the service lines, and to maintain and keep in good repair all connections and appurtenances thereto from said defendant company's mains to the property line of the consumer because of certain charges for turning water on at the main-taps when the water was cut off for cause; because of cutting off of water without notice; because of failure to install hydrants
1341 at points designated by complainant's Board of Affairs for fire protection; because of failure to change the grade of its water mains to conform to the change in street grades, and because of the impure and unwholesome condition of the water supplied.

On the 2nd day of September, 1914, the defendant company filed its answer to said complaint, insisting on its right to require the consumer to bear the expense of installation and maintenance of the service lines from the mains of respondent to the property lines, and the charge for cutting on and off of the water for cause, by reason of certain contractual relations between the consumers of water and respondent, and specifically denying the other allegations in said complaint.

By agreement, on the 13th day of April, 1915, the Commission sitting at Bluefield, a hearing was had on the issues raised by said complaint and answer, and the testimony of witnesses was taken.

On the 14th day of April, 1915, said defendant, the Bluefield Water Works & Improvement Company, filed its formal petition, duly verified, alleging among other things, that it was a public service corporation, created and organized under and by virtue of the laws of the State of West Virginia, and that as such it had been for many years furnishing water to the city of Bluefield and the citizens thereof, and that it had in effect the following schedule of rates, fares, tolls and charges, to-wit:

Dwelling Houses, per Year, Occupied by One Family.

One year for one hydrant or spigot	$9.00
One bath tub	3.00
Shower bath, not connected with bath tub	3.00
Water closet, each bowl	3.00
Urinal	1.50
Set basin, each	1.50
One set of wash tubs, not exceeding three tubs	5.00
Each additional set of wash tubs	2.00
Each family having separate fixtures will be charged the same as if living in a separate house. If using the same fixtures, each additional family will be charged	9.00

Water rents at the above rates are to be paid strictly in advance. See Rule 22.

Boarding and Lodging Houses per Year.

For six rooms or less	$12.00
Each additional room without spigot	1.00
One room or hall with spigot and washstand	3.00
1342 Each additional room with washstand and spigot	1.50
Water closet, each bowl	7.50
Urinal	3.00
Sink, slop over one	5.00

Water rents at the above rates to be paid strictly in advance. See Rule 22.

Hotels per Year.

Each room including those occupied by the proprietor, his family and employes	$1.00
Water closet, each bowl	7.50
Urinal	3.00
Set basin, each	3.00
Billiard saloon	10.00
Bowling alley	10.00
Bath tub	5.00
Laundry	15.00
Bakery	15.00
Bar room	25.00
Hose	10.00

Water rents at the above rates are to be paid strictly in advance. See Rule 22.

Fountains.

The following fixtures will be allowed and furnished with water only on metered services:

Sprinkler, or movable fountain for lawn, or garden, center fountain, fountain in yard or garden, garden hydrants, street, window and pave washers.

Livery Stable per Year.

Fifteen stalls or less, each stall, not exceeding fifteen (15)	$2.00
Each stall exceeding 15 and not exceeding 25	1.00
Twenty-five to 40 stalls, each stall, exceeding 25 and not exceeding 40	.75
Over 40 stalls, each stall exceeding 40	.50
Hose for livery stable 15 stalls or less, each stable	10.00
Hose for livery stable 15 to 25 stalls, each stable	15.00
Hose for livery stable over 40 stalls, each stable	25.00
Hacks, each	3.00
Hose for livery stable 25 to 40 stalls, each stable	20.00
Hearse	3.00

Water rents at the above rates are to be paid strictly in advance. See Rule 22.

1343 Printing Offices per Year.

Printing office	$10.00

Water rents at the above rates are to be paid strictly in advance. See Rule 22.

Restaurant and Eating Houses per Year.

Restaurant or eating house, without bar attached	$12.00
Restaurant or eating house, with bar attached	35.00

Water rents at the above rates are to be paid strictly in advance.

Stores per Year.

Stores where no liquors are sold	$9.00
Stores with license to sell spirit or malt liquors	25.00

Water rents at the above rates are to be paid strictly in advance. See Rule 22.

Building Purposes.

Laying brick per 1,000	$.15
Masonry, per cubic yard	.06
Water used in the construction of artificial or cement pavements, paid in advance, per sq. yd	.05
Plastering, per 100 square yards	.30

Or on metered services at 25 cents per 1,000 gallons.

Water for building purposes will be furnished only under special permit. See Rules.

Sundries.

Post Office	$9.00
Banks	12.00
Butcher shop	25.00
Bar room	25.00
Barber shop	10.00
Billiard saloon	10.00
Bowling alley	10.00
Bakery	15.00
Buggy	1.50
Bath tub, public	5.00
Boiler with engine attached for each horse power	3.00
For each horse-power of boiler, above capacity of engine	1.00
Boiler when used without engine, each horse power	2.00
Horse, mule or cow, not belonging to livery stable	2.00
Laundry	15.00
Machine shop	15.00
Offices with spigot	5.00
Two or more offices using the same spigot, each	2.50
Photograph gallery	12.00
Theater or public hall	10.00

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Work shop	9.00
Water closet, each bowl, public	7.50
Urinal	3.00
Water closet, private, each bowl	3.00
Wash basin or box not otherwise provided for	3.00
Soda fountain, six months	10.00
Tumbler washer	15.00
Tumbler washer, continuous, six months	30.00

Water rents at the above rates are to be paid strictly in advance. See Rule 22.

Meter Rates.

All bills for water shall be computed each month, upon the following rates and basis: 25 cents per 1,000 gallons.

All water that passes through the meter will be charged for, whether the water is used or wasted.

A minimum charge per month will be made should the amount of water as registered by the meter and charged for as above not amount to that sum.

The minimum rate shall start from the date of the contract.

Special Rates.

Any private consumer, desiring a lower rate can obtain same by signing a special contract at any one of the following rates:

20c. per 1,000 gallons.....	$6.50	monthly minimum rate.
17½c. per 1,000 gallons.....	16.50	monthly minimum rate.
15c. per 1,000 gallons	50.00	monthly minimum rate.
12½c. per 1,000 gallons.....	125.00	monthly minimum rate.

Sprinkler heads .06c. each.
Minimum rate $100.00.....6" pipe 2,000 sprinkler heads.

Minimum Charge.

For water supplied through a one-half inch meter, per month	$.75
For water supplied through a three-fourth inch meter, per month	4.75
For water supplied through a one inch meter, per month...	6.00
For water supplied through a one and one-half inch meter, per month	15.00
For water supplied through a two-inch meter, per month...	35.00
For water supplied through a three-inch meter, per month	85.00
For water supplied through a four-inch meter, per month..	210.00

At least the minimum consumption noted above will be charged notwithstanding a less amount may have been registered by the meter. The fact that the minimum consumption charged has not been used in any month shall not entitle the water taker to
1345 any credit for such deficiency in case the minimum is exceeded in the next or any subsequent month.

Meters will be read near the last of each month and bills presented the first day of the month immediately following month in which the service was rendered, and if not paid within 30 days after the date of same the water will positively be cut off, and interest charged together with the actual cost of cutting the supply off and turning it on again will be made and collected before the water is again turned on.

All Rules and Regulations and parts of Rules and Regulations inconsistent with the provisions of these Rules and Regulations and coming within the purview thereof, are hereby cancelled.

Approved by the Board of Directors March 25, 1908.

Among the more potent reasons for the authority sought of the Commission to increase its rates then in force, were that the topography of the country at and surrounding the City of Bluefield, together with the elevation of said City rendered the supplying of water extremely difficult and very expensive, and that water could not be supplied to said City and its inhabitants at said rates, so as to enable petitioner to make a reasonable return on its investment. It, therefore, asked to have and put into effect the following schedule of rates:

Schedule of Proposed Rates and Charges.

Domestic rate 50 cents per each 1,000 gallons, with a monthly minimum charge of $1.00; all domestic services to be metered.

Special Rates.

30	cents per 1,000 gallons, monthly minimum charge...	$7.50
20	cents per 1,000 gallons, monthly minimum charge...	16.50
15	cents per 1,000 gallons, monthly minimum charge...	50.00
12½	cents per 1,000 gallons, monthly minimum charge...	125.00

Monthly Minimum Charge for Meters.

½	inch meter	$1.00
¾	inch meter	4.75
1	inch meter	6.00
1½	inch meter	15.00
2	inch meter	35.00
3	inch meter	85.00
4	inch meter	210.00

Fire Protection.

Public fire hydrants $40.00 per year, payments to be made quarterly.

Private fire hydrants $40.00 per year, payments to be made quarterly.

Private stand pipes with hose connections $40.00 per year, payable quarterly.

1346 Sprinkler Services.

For 1,000 heads or less $100.00 per year, payable quarterly; each additional head 5 cents.

On said 14th day of April, 1915, an order was entered by the Commission requiring said applicant company to publish notice of its application once each week for four successive weeks in some newspaper of general circulation in the City of Bluefield, and to file a copy of same for public inspection in the office of the Mayor of said City; said order further providing that leave be granted to any person interested to file objections within thirty days from the date thereof, and said cause was set down for hearing at the general session of the Commission to be held at the Capitol Building, in the City of Charleston, on the 13th day of May, 1915.

The City of Bluefield appeared and opposed the increase of rates as asked for by petitioner, and requested the production by it of an inventory of all property and equipment used in connection with its water plant, together with the costs of operation and maintenance

and income derived therefrom. On the 22nd day of May, 1915, an order was entered by the Commission consolidating said two causes, and a further hearing was had at Bluefield on the matters arising on the pleadings in said cause, testimony of witnesses introduced and exhibits were filed, and said hearing finally concluded on the 27th day of July, 1916, and on the 25th day of February, 1917, exhaustive and instructive briefs were filed by counsel in said causes, and the same were submitted for final hearing.

Of the several causes of complaint set out in the petition of the City of Bluefield against the water company the one to which most importance is attached and which it seems to urge most persistently, not only because of the effect it has on the streets of the City, but the expense and inconvenience to which it subjects the citizens, is the Rule requiring consumers to install and maintain, or pay for the installation and maintenance, of the service pipes from the mains of the defendant company to the property line, the City contending that these service pipes being a part of the company's distribution system, should be installed and maintained by it, the company alone having the right under its franchise to enter on and excavate the streets for that purpose; that its failure to repair service pipes in which leaks frequently occur, has caused great damage to the streets by undermining the pavements, and in the repairing of the
1347 excavations made necessary by installing the service pipes, by unskillful and improperly equipped labor.

The water company takes the position that the Commission is without jurisdiction to regulate or control it in relation to the laying and maintaining of the service pipes, because of the terms of the franchise given it by the City of Bluefield, as follows:

"Be it ordained by the City of Bluefield that the said Bluefield Water Works & Improvement Company, its successors and assigns, have the right to construct and forever maintain their said water works, pipes and mains through, beneath, over, across and along any and all of the streets, alleys and public grounds of the City of Bluefield, for the purpose of maintaining, supplying and furnishing water to the said City of Bluefield and the citizens and property owners thereof for domestic and manufacturing purposes for which it is desirable, for rent, lease, hire, sale and reward, upon any terms and conditions that, from time to time may be agreed upon by and between the said Bluefield Water Works & Improvement Company, its successors and assigns, and the City of Bluefield and other patrons and customers of the said Bluefield Water Works & Improvement Company and its successors and assigns."

In pursuance of the foregoing ordinance it has entered into contracts to furnish water to the citizens by the terms of which it is expressly provided that they shall install and maintain said service pipes.

No difficulty whatever would be encountered in disposing of this question were it merely a matter of fixing a rate, as the Supreme Court in the case of City of Benwood et al. vs. Public Service Com-

mission, 75 W. Va., 127, in construing sections 4 and 5 of Chapter 9, of the Acts of the Legislature of 1913 creating the Public Service Commission held, that, notwithstanding the grant and acceptance of a franchise wherein certain rates were fixed, creating a contract between the water company and the City, the rates thereby fixed were nevertheless cognizable for revision by the Public Service Commission, under the broad powers delegated thereto, unless prior to the delegation of these powers the Legislature had expressly delegated power to the City which authorized it to contract inviolable for the rates mentioned in the franchise for the period stated therein. The Commission, recognizing its right to disregard contracts, has, in a number of cases, since the one above referred to, on proper showing, permitted a change from the contract rate.

1348 In re Glenville Natural Gas Co., P. U. R. 1915-F, 848; and in re Montgomery Gas Co., recently decided (not yet reported) the position of the Commission being clearly stated by Chairman Morgan saying:

"There is no question as to the legal right of the Commission, in establishing rates for a utility, to ignore contracts of the character mentioned. This proposition is conceded by counsel for protestants. We are of the opinion that, before a utility should be permitted to violate its solemn contract, it should clearly appear that the enforcement thereof would either be unconscionable or result in an unjust discrimination;" * * *

But, as has been said, the cause of complaint here, is one of practice and not a rate.

It seems to be well settled that a public utility, furnishing its product to consumers through pipes, is required to deliver it to the property line, the general rule being stated in Pocatello Water Company vs. Standley, 61 Pac. Rep., 518, points 3, 4 and 6 of the syllabus, as follows:

"3. Held, under its franchise it is required to lay all mains and pipes in the streets and alleys of the city of Pocatello, necessary to accomplish the purposes for which said franchise was granted, and, on proper demand, to tap and connect such mains or pipes with the private pipes of citizens of said city at the line of its franchise limits, to-wit, the said lines of said streets and alleys.

"4. Held, that such connections and pipes within said limits so laid by the company are part of the property of said company, and necessary to complete its said water works system, and necessary to accomplish the purpose for which said franchise was granted.

"6. Held, that the company must lay all necessary water pipes within its franchise limits at its own expense."

Other cases in point are Bothwell vs. Consumers Company, 92 Pac. Rep., 533; Hatch vs. Consumers Company, 104 Pac. Rep., 670,—the latter case reviewed by the Supreme Court and affirmed; U. S. Sup. Ct. Rep. 56, L. Ed. 146.

The Commission has uniformly required the utilities to install these service lines from their mains to the property line, following the rule announced in the case of South Buckhannon vs. the
1349 Buckhannon Light & Water Company, P. U. R. 1915-F, 383.

Aside from this it would seem that the water company could not, in good conscience, ask the Commission to change its general rule in order to preserve its contracts with the water consumers, and at the same time, in its application to increase its rates for water, ask the Commission to ignore the provisions of its franchise from the City providing for a maximum rate of 25 cents per thousand gallons by meter and $30.00 per hydrant for fire protection.

The Commission is, therefore, of the opinion, notwithstanding the said contract, that inasmuch as it has adopted the rule that utilities should install and maintain the service lines from their mains to the property lines, and in order to preserve a uniform practice among utilities in this regard, the company should cease and desist from the practice of requiring consumers to pay for the installation and maintenance of the lateral pipes from its mains to the property lines; especially is this true, since the additional expense to the water company is considered in fixing the rates hereinafter announced.

The second cause of complaint of petitioners against the defendant water company is its practice of cutting off water from delinquent consumers without notice and of the charge made therefor. The water company in its "Rules, Regulations and Water Rates" adopted by it and effective since April, 1908, at page 11, under the head "Rules Regarding Payment of Bills for Water," says:

"Rule 22. All water rents on flat rate are due and must be paid quarterly in advance. Where water is furnished through meters and at meter rates, all water rents are due and must be paid by the first of the month following the month in which the service was rendered. If water rents are unpaid for a term of thirty days on flat rate, or for a term of ten days on metered services, after the same are due, the water will positively be cut off and interest charges together with the actual cost of cutting the supply off and turning it on again will be made and collected before the water is again turned on."

There can be no question as to the right of a water company, supplying a city and its inhabitants with water, to make and enforce such rules and regulations for its convenience and security as are reasonable and just, and which do not unfairly discriminate; and it has been held in numerous cases that a water company is within its rights in enforcing a rule which provides for the cutting off of water for non-payment of rents.

40 Cyc., page 804:

1350 "A water company or a municipality operating water works may enforce payment of its lawful charges by shutting off the water from any particular premises when the bills for water furnished there are overdue and refusing to furnish water until such bills are paid."

30 Am. & Ency. of Law (2nd Ed., page 419):

* * * "Thus a water company may within reasonable limitations cut off the water supply of those who refuse to pay water rents due."

Appeal of Brumm, 12 Atl. 855:

"A water company may provide by by-laws, that if water rent is not paid, the supply shall be cut off until all arrears and expenses of shutting off are paid."

The Tacoma Hotel Company vs. Tacoma Light & Water Company, 3 Wash. St., 316; 28 Pac. 516; 28 Am. St. Rep., page 35:

"A rule of a water company which provides that, after default for fifteen days in the payment of water rents, the water shall be shut off from the premises is a reasonable regulation."

The rule here complained of seems to be one common to all water companies, recognized and observed by consumers generally, and we feel that the complainants should not object to its enforcement by the water company, as it is in their power to obviate the dangers that might result from the cutting off of their water supply by the prompt payment of their water rents. The same is true as to the charge by the company for cutting the water off and turning it on, it appearing from the evidence that the charge is merely to cover the actual expenses of the service. The Commission is, therefore, of the opinion that said rule is reasonable and that the water company is justified, within reasonable limitations, in enforcing the same.

Another cause of complaint is the failure of the water company to make certain extensions of its 6 inch mains for additional fire protection. It appears from the evidence that the Board of Affairs had directed the location of a fire hydrant at the north line of Bell Street with the west line of Wythe Avenue, and that to install the same at this point would necessitate the extension of the 6 inch main 1,520 feet, at a cost of approximately one dollar per lineal foot; and the one as presently located on Union Street, near the old park
1351 entrance, be moved 1,000 feet east from Bland Street, necessitating the extension of the main 435 feet, thus requiring the water company to maintain 1,135 feet of 6 inch line to furnish water for the one hydrant. Also that the hydrant now located on Earle Street be moved 1,000 feet east from Bland Street, necessitating the laying of 1,060 feet of 6 inch line, altogether involving an investment of approximately $3,000.00, with an annual return of $30.00 per hydrant or $90.00, and that only a few residents would be affected by the extension. (Record pages 123 to 128.) The facts as to the extension, as above stated, were not controverted by the City of Bluefield, and the only evidence of the necessity for the service, or the reasonableness of the demand therefor, is the request of the Board of Affairs for said extensions.

It is true that, when the water company accepted the franchise

from the City of Bluefield, it undertook to supply the municipality and its inhabitants with water and it assumed a public duty to be discharged for the public benefit; the duty of providing a service system which would be reasonably adequate to meet the wants of the City, not only at the time it began its service but to keep pace with the growth of the City and to gradually extend its system as the reasonable wants might require, yet it could hardly be claimed that this obligation would require it, on the demand of a citizen or even a number of them, residing at such a distance from its mains as already extended, to further extend them at a large expense, when the return thereon would be so slight as to be almost negligible. So, the only question here is, should the water company be required to make these extensions under the conditions disclosed by the evidence above referred to?

In the case of Lukrawka vs. Spring Valley Water Company, 146 Pac., 640, the law seems to be clearly stated on this question. Point 3 of the syllabus is as follows:

"The expense of making water extensions demanded of a water company by inhabitants of a municipality is not the controlling feature in determining the reasonableness of the demand therefor, because water rates, as a whole, must be sufficient to allow a fair, just, and reasonable income on the property of the company devoted to public use which would include such necessary expenditures; but an additional expenditure by the company, or an additional burden on the rate payers as a whole, should not be imposed for the benefit of a particular portion of the community unless a reasonable necessity for it exists."

1352 And the foregoing is applicable also to the service asked for in the petition for the North Side, it appearing from the evidence that to install this service a very considerable expenditure would be necessary, and for the present a very small return would be realized.

The Commission is, therefore, of opinion, for the reasons above stated, that to require the water company to make the extensions asked for would, at this time, be unreasonable.

Another cause of complaint of petitioner is the refusal of the water company to install a certain device whereby the valves connecting the high pressure line with the mains of the company can be opened by the use of an electric switch in case of fire, at the headquarters of the City Fire Department, instead of maintaining said switch at the office of the water company. It appears from the testimony (Record, pages 128 to 132) that these electric hydraulic valves were placed by the water company, and are controlled by switchboard in its office, at its own expense and at a cost of $1,500.00 a year, in order to save the time required to send a man to the valves to open them in case of fire; that any carelessness or oversight in the operation of the control switch would undoubtedly result in damage to the company. The Commission is, therefore, of opinion that the water company alone should have control of the switch-board, especially so since it appears that someone of its officers is at all times easily accessible.

There only remains the complaint as to the unsanitary condition of the water supply. An examination of the monthly reports of the bacteriological tests of water made at the State Hygienic Laboratory for the past eighteen months, on file in the office of the Commission, indicates that the water furnished by the defendant company at Bluefield is unusually free from bacteria, and as no evidence was offered by the City as to the condition of the water at the last hearing, the Commission assumes that if there did exist a cause for complaint it has been corrected.

In entering upon the consideration of the application of the water company to increase its rates, the first proposition is to determine a fair present value of the property of the applicant company, used and useful in the public service. For the enlightenment of the Commission three bases or methods of arriving at such valuation have been presented, as follows:

1st. Investment Plus Deficits;

2nd. Reproduction—New—Less Depreciation, and

1353 3rd. Net Investment as shown by the books of the company.

The first basis of valuation, Investment Plus Deficits, is predicated on the theory that a public utility is entitled to earn a fair return on the amount of capital invested in its utility business, and in the event it fails to so realize such return, the difference between what it would be reasonably presumed to be entitled to earn, and the amount which it did actually earn, should be added to the amount it had invested in its property used and useful in the public service.

It occurs to the Commission that this method is seriously objectionable, for the reason that it deals exclusively with the past history of the company rather than the present and the future. It could not be said in fairness to a utility, that it should be deprived of a fair return on a proper valuation of its property used in the public service at the present time, because of excessive earnings it may have realized in the past, and by the same process of reasoning it could hardly be fair to the present consumers to impose an excessive rate to cover deficits by reason of inadequate charges or from other causes in the past.

The second basis of valuation proposed, and to which most attention has been given in the preparation of these causes, is "Reproduction—New—Less Depreciation." This method is frequently adopted in arriving at the value of the property of a public utility for rate-making purposes, and in this case both the water company and the City have evidently proceeded on the theory that the Commission would adopt this method in arriving at a valuation of applicant company's property.

The water company secured the services of Mr. John W. Alvord of Chicago, who has been engaged in hydraulic and sanitary engineering for thirty-six years, with a wide experience in constructing and remodeling water works in various parts of the United States, who proceeded to reproduce, by hypothetical construction, the ap-

plicant company's plant. Mr. Alvord's testimony, supplemented by his reports, is very exhaustive, covering many hundred pages of the record in these causes, showing in detail the process employed by him, being that generally approved by courts and commissions in arriving at the value of public utility properties for rate-making purposes under this method.

The City of Bluefield employed Mr. W. E. Miller, a Civil Engineer, of Madison, Wisconsin, who has also had a wide experience in his profession, having been since 1907 continuously in the em-
1354 ploy of the Railroad Commission of Wisconsin, and engaged chiefly in the valuation of the property of water and gas utilities, who also made an investigation of the applicant company's property, and filed with his testimony a report in detail of the valuation thereof under this method.

The present value of applicant company's property, as ascertained by Alvord, applying the method for same as shown by his report, is $540,000.00, and by Miller, using the same method, $392,000.00. The results produced by these eminent experts show a wide variance,—that is $148,000.00; a difference would naturally be expected in building this theoretical valuation, but when it is observed that these experts employed the same method, considered identically the same items of materials, equipment and labor, made their investigations under the same conditions, and their inventories at the same time, the variance seems to be irreconcilable.

The principal differences between the valuations of Alvord and Miller appear in the following eight items:

	Alvord.	Miller.
1. Preliminary cost	$14,455.00	$1,000.00
2. Water rights	50,000.00	Nothing
3. Cutting pavements over mains	27,744.00	233.00
4. Pipe lines from gravity springs	22,072.00	15,442.00
5. Laying cast iron street mains	19,252.00	15,212.00
6. Reproducing Ada Springs	18,558.00	13,027.00
7. Superintendence and Engineering	20,515.00	13,621.00
8. General contingent cost	16,415.00	5,448.00
Total	$189,011.00	$63,983.00

The residue of the $148,000.00 consists of the difference in cost of numerous small items.

The third method presented is that of "Net Investment" as shown by the books of the water company. The books of the company show a total gross investment, since its organization, of $407,882.00, and that there has been charged off for depreciation from year to year the total sum of $83,445.00, leaving a net investment of $324,427.00.

The usual argument that this basis of valuation (Net Investment) should not be used for rate-making purposes because of improperly kept accounts or lack of knowledge of the early history of the property, cannot be used with much effect in this proceeding. From an

examination of the books, as shown by the report of Mr. H. E. Nease, Chief Statistician for the Commission, and by Mr. E. E. Smith, a witness for the water company, it appears that the records
1355 of the company have been remarkably well kept and preserved. It, therefore, seems that when a plant is developed under these conditions the net investment, which, of course, means the total gross investment less depreciation is the very best basis of valuation for rate-making purposes, and that the other methods, above referred to, should be used only when it is impossible to arrive at the true investment. Therefore, after making due allowance for capital necessary for the conduct of the business and considering the plant as a going concern, it is the opinion of the Commission that the fair value for the purpose of determining reasonable and just rates in this case of the property of the applicant company, used by it in the public service of supplying water to the City of Bluefield and its citizens, is the sum of $360,000.00, which sum is hereby fixed and determined by the Commission to be the fair present value for the said purpose of determining the reasonable and just rates in this case.

It appears from data furnished the Commission from the consumers' ledger, by the water company, for the twelve months ending February 28, 1917, that the gross income from the different classes of service was as follows:

Meter consumers	$34,719.26
Flat rate consumers	6,703.87
Private fire protection	667.81
City, public fire protection	3,300.00

That the operating expenses for the calendar year of 1916, as shown by the books of the company, were $26,463.00. There is, however, included in the operating expenses, as above, an item of $5,264.00 for expenses of the Philadelphia Office of said company. The Commission does not deem it proper to allow a charge of this amount against operations for the purpose of maintaining an office out of the State at which the general books of the company are kept, especially so since the evidence shows that the company's office at Bluefield is amply equipped for the conduct of the Company's business. The distribution of the net earnings of the company is a matter which solely concerns the stockholders and the management of the company, and is one with which the Commission is not concerned, but it is especially concerned in seeing that no improper amount is charged to operating expenses in fixing rates. It may, however, be necessary to the proper conduct of the business to keep these general books, and for this purpose the sum of $1,500.00 would seem sufficient to cover the expenses incident thereto. There-
1356 fore, the item of $5,264.00 should be, in the opinion of the Commission, reduced to $1,500.00, leaving operating expenses for the year 1916, $22,699.00.

The question, then, is to arrive at an amount that will insure to the applicant company a fair return on the value of its property, as

aforesaid. Should the Commission adopt the rates proposed by the company its gross receipts would be $73,493.88, assuming that the consumption of water would be the same as it was for the year 1916, and which would give to the water company a return of 14% plus after the payment of operating expenses; this, in the opinion of the Commission, would be excessive, but instead a rate should be fixed which will allow it to earn about 8 per cent on the value of its property as fixed above. This will allow it, in addition to 6 per cent, 2 per cent to cover depreciation and the risk incident to the business, and in order to realize this return, under the present consumption of water, it is necessary that the gross receipts be increased to approximately $51,500.00. The next question is to determine what classes of service should be required to bear the increase.

It appears that the water company served approximately 157,518,000 gallons of water during the year 1916, and that the cost of serving was $22,699.00, which is properly chargeable to operation. Therefore the cost of serving 1,000 gallons of water was 14.4 cents, so it will be observed that some of the consumers availed themselves of the special rates, as provided for in the schedule of rates, and secured water for less than the cost of production and that the receipts from this class of service was $5,296.65. The Commission, therefore, is of opinion that the rates for this class of service should be increased as follows:

20c. to 25c.
17½c. to 20c.
15c. to 18c.
12½c. to 16c., which will produce $6,409.62, or an increase of $1,112.97.

It is very apparent that the City is not bearing its just proportion of the total revenues necessary to provide a reasonable return to the water company for such fire protection as it received. The general rule adopted by rate-making bodies and approved by the courts in apportioning the gross revenues between private and commercial consumers, and public or fire protection is to charge from 65% to 70% to the former and from 30% to 35% to the latter, while in this case the City of Bluefield is paying only about 7 per cent of the gross revenues while it is conceded that the fire protec-
1357 tion is inadequate even to meet the present requirements, the Commission is of opinion that the present service is reasonably worth $5,000.00 per year to the City of Bluefield, which is $40.00 per hydrant for the 125 hydrants now in service. This will increase the revenue $1,700.00.

It appears that there are 747 consumers of water who use 2,500 gallons or less per month, and that other metered domestic consumers used 88,749 M gallons during the year 1916. The Commission is, therefore, of the opinion that the water company should be permitted to charge a minimum rate of 75 cents per month and to increase its meter rates to 30 cents per thousand gallons.

The following is an estimate of the gross revenues anticipated herein, based on the consumption of water and the receipts therefor for said year 1916, as aforesaid:

747 Minimum rate consumers	$6,723.00
88,749 M gallons @ 30 cents	26,624.70
Special rate consumers	6,409.62
Flat rate consumers	6,703.87
Private fire protection	667.81
City fire protection	5,000.00
Total	$52,129.00

The Commission is of opinion, and so finds, that the company is entitled to an annual return on the fair value of its property, aggregating the sum above specified, at least, and that same is just and reasonable, and equitably proportioned and distributed among the different classes of consumers.

An order will be entered in accordance with the views expressed in the foregoing opinion.

Morgan, Chairman, concurs, and Commissioner Wiles took no part in the consideration and decision of this case.

1358 *Order.*

(Case No. 59.) Formal Complaint No. 58.

CITY OF BLUEFIELD

vs.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY

and

(Case No. 368.)

In re BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY.

Application for Authority to Increase Rates, Tolls, and Charges for Water.

These causes came on this day to be finally heard upon the petitions and applications and answers thereto, exhibits filed herein, evidence taken and briefs of applicant and respondent; upon consideration whereof, for the reasons set forth in the written opinion in these causes and hereby made a part of the record hereof, it is ordered by the Commission,—

1st. That the Bluefield Water Works & Improvement Company do cease and desist from its practice of requiring the consumer to construct and maintain the service line from its main to the curb or property line.

2nd. That the petitioner, the Bluefield Water Works & Improvement Company, be permitted, and is hereby given authority, to increase its rates for water, commencing on the first day of May, 1917, as follows:

Dwelling Houses, per Year, Occupied by One Family.

One year for one hydrant or spigot	$9.00
One bath tub	3.00
Shower bath, not connected with bath tub	3.00
Water closet, each bowl	3.00
Urinal	1.50
Set basin, each	1.50
One set of wash tubs, not exceeding three tubs	5.00
Each additional set of wash tubs	2.00
Each family having separate fixtures will be charged the same as if living in a separate house. If using the same fixtures, each additional family will be charged	9.00

1359 Boarding and Lodging Houses per Year.

For six rooms or less	$12.00
Each additional room without spigot	1.00
One room or hall with spigot and washstand	3.00
Each additional room with washstand and spigot	1.50
Water closet, each bowl	7.50
Urinal	3.00
Sink, slop over one	5.00

Hotels per Year.

Each room including those occupied by the proprietor, his family and employes	$1.00
Water closet, each bowl	7.50
Urinal	3.00
Set basin, each	3.00
Billiard saloon	10.00
Bowling alley	10.00
Bath tub	5.00
Laundry	15.00
Bakery	15.00
Bar room	25.00
Hose	10.00

Livery Stable per Year.

Fifteen stalls or less, each stall, not exceedings fifteen (5)	$2.00
Each stall exceeding 15 and not exceeding 25	1.00
Twenty-five to 40 stalls, each stall, exceeding 25 and not exceeding 40	.75
Over 40 stalls, each stall exceeding 40	.50
Hose for livery stable 15 stalls or less, each stable	10.00
Hose for livery stable 15 to 25 stalls, each stable	15.00
Hose for livery stable 25 to 40 stalls, each stable	20.00
Hose for livery stable over 40 stalls, each stable	25.00
Hacks, each	3.00
Hearse	3.00

Printing Offices per Year.

Printing office	$10.00

Restaurant and Eating Houses per Year.

Restaurant or eating house, without bar attached	$12.00
Restaurant or eating house, with bar attached	35.00

Stores per Year.

Stores where no liquors are sold	$9.00
Stores with license to sell spirit or malt liquors	25.00

1360 Building Purposes.

Laying brick per 1,000	$.15
Masonry, per cubic yard	.06
Water used in the construction of artificial or cement pavements, paid in advance, per sq. yd	.05
Plastering, per 100 square yards	.30

Or on metered services at 25 cents per 1,000 gallons.

Sundries.

Post office	$9.00
Banks	12.00
Butcher shop	25.00
Bar room	25.00
Barber shop	10.00
Billiard saloon	10.00
Bowling alley	10.00
Bakery	15.00
Buggy	1.50
Bath tub, public	5.00
Boiler with engine attached for each horse power	3.00
For each horse-power of boiler, above capacity of engine	1.00
Boiler when used without engine, each horse power	2.00
Horse, mule or cow, not belonging to livery stable	2.00
Laundry	15.00
Machine shop	15.00
Offices with spigot	5.00
Two or more offices using the same spigot, each	2.50
Photograph gallery	12.00
Theater or public hall	10.00
Work shop	9.00
Water closet, each bowl, public	7.50
Urinal	3.00
Water closet, private, each bowl	3.00
Wash basin or box not otherwise provided for	3.00
Soda fountain, six months	10.00
Tumbler washer	15.00
Tumbler washer, continuous, six months	30.00

Meter Rates.

All bills for water shall be computed each month, upon the following rates and basis: 30 cents per 1,000 gallons.

All water that passes through the meter will be charged for, whether the water is used or wasted.

A minimum charge per month will be made should the amount of water as registered by the meter and charged for as above not amount to that sum.

The minimum rate shall start from the date of the contract.

1361

Special Rates.

Any private consumer, desiring a lower rate can obtain same by signing a special contract at any one of the following rates:

25c. per 1,000 gallons	$6.75 monthly minimum rate.
20c. per 1,000 gallons	20.00 monthly minimum rate.
18c. per 1,000 gallons	54.00 monthly minimum rate.
16c. per 1,000 gallons	128.00 monthly minimum rate.
Sprinkler heads .06c. each.	
Minimum rate $100.00	6" pipe 2,000 sprinkler heads.

Minimum Charge.

For water supplied through a one-half inch meter, per month	$.75
For water supplied through a three-fourth inch meter, per month	4.75
For water supplied through a one inch meter, per month	6.00
For water supplied through a one and one-half inch meter, per month	15.00
For water supplied through a two-inch meter, per month	35.00
For water supplied through a three-inch meter, per month	85.00
For water supplied through a four-inch meter, per month	210.00

Fire protection.

Public fire hydrant $40.00 per year, payments to be made quarterly.

Private fire hydrants $40.00 per year, payments to be made quarterly.

3rd. That the applicant, the Bluefield Water Works & Improvement Company, shall keep an accurate account of receipts from its water business under the foregoing schedule of rates, as well as the expenses of operation, up to and including the 31st day of December, 1917, and shall immediately after the 1st day of January, 1918, furnish same to the Commission.

4th. These causes shall be retained on the docket in order that the Commission may make such further order and take such further proceedings therein, especially in relation to the matter of fire protection, as it may deem proper.

1362 At another day, to-wit, on the 23rd day of October, 1917, the following order was made and entered:

Absent: Judge Ritz.

3411.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY, Petitioners

vs.

PUBLIC SERVICE COMMISSION et al., Respondents.

Upon Petition for Suspension of the Order of the Public Service Commission Entered on the 24th Day of April, 1917.

This day came the petitioner, by Sanders & Crockett, respondent, City of Bluefield, by John R. Dillard, its attorney, and respondent, Public Service Commission, by S. B. Avis, its attorney, and here the respondents, by counsel, waived the giving of bond by petitioner as required by law and also waived the preliminary hearing, and

this case was fully heard upon the papers, documents, evidence and records, or certified copies thereof, which were before said commission at the hearing which resulted in the order complained of herein, together with a written statement of its reasons for the entry of said order, and the arguments of counsel thereon, and, by agreement of counsel, is submitted for decision.

At another day, to-wit, on the 30th day of October, 1917, the following order was made and entered:

3411.

CITY OF BLUEFIELD, Respondent,

vs.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY, Petitioner,

and

In re BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY.

Upon Petition for a Suspension of the Order of the Public Service Commission Entered on the 2*rth* Day of April, 1917.

The Court, having maturely considered the papers, documents, evidence and records, or certified copies thereof, which were before the Public Service Commission at the hearing which resulted in the entry of the order complained of, together with a written
1363 statement of the reasons of said Commission for the entry of said order and the arguments of counsel thereon, is of opinion, for reasons stated in writing and filed, that the petitioner, Bluefield Water Works & Improvement Company, is not entitled to the relief prayed for in its petition filed in this Court. It is therefore considered by the Court that the petition filed in this case be and the same hereby is dismissed from the docket of this Court, but without prejudice to the rights of petitioner upon final hearing of the proceedings before the Public Service Commission, and that the respondent, City of Bluefield, do recover from the petitioner its costs about its defense in this Court in this behalf expended.

It is further ordered that leave be granted to respondent, Public Service Commission, to withdraw from the office of the Clerk of this Court, all the papers, documents, evidence and records, or certified copies thereof, heretofore filed in said office by said Commission.

The decision of points in the foregoing case, as the same appears from the syllabus and written opinion prepared by Judge Miller, was concurred in by Judges Lynch, Poffenbarger and Williams.

The decision of points as shown by the syllabus and written opinion aforesaid are in the words and figures following:

1364 No. 3411.

CITY OF BLUEFIELD

v.

BLUEFIELD WATER WORKS & IMPROVEMENT CO.

and

In re BLUEFIELD WATER WORKS & IMPROVEMENT CO.

Upon an Application to the Public Service Commission for Authority to Change Water Rates.

From Public Service Commission.

Petition Dismissed.

MILLER, Judge.

Syllabus

1. Provisional orders of the Public Service Commission, valuing the property of and fixing rates to be charged by a public service corporation for experimental purposes, and retaining the case on its docket for future action after the result of such experiment is ascertained are not final orders, subject to the control of this court under section 16 of the Public Service Commission Act.
2. The valuation of the property of a public service corporation and prescribing rates for tolls and charges for services to be rendered are purely legislative acts, not subject to judicial review except in so far and in so far only as may be necessary to determine whether such rates are void on constitutional or other grounds.

1365 MILLER, *Judge:*

The Bluefield Water Works and Improvement Company, in its petition presented to this court pursuant to section 16, of chapter 15-0 Barnes' Code, complains of an order, designated as as the final order, of the Public Service Commission, entered in said proceedings consolidated on the 24th day of April, 1917.

The prayer of the petition is that said order be suspended; that a time be set for a hearing thereon, and that the order so entered be reviewed, reversed, set aside, and that this court enter such order as may be proper in the premises.

The order in question covers four subjects as follows:

First, that the Bluefield Water Works and Improvement Company do cease and desist from its practice of requiring the con-

sumers to construct and maintain the service line from its main to the curb or property line.

Second, that the petitioner, the Bluefield Water Works and Improvement Company, be permitted, and is hereby given authority, to increase its rates for water, commencing on the first day of May, 1917, according to the classified schedule of rates fixed by the commission and specifically set out in the order.

Third, that the Bluefield Water Works and Improvement Company shall keep an accurate account of receipts from its water business under the said schedule of rates, as well as the expenses of operation, up to and including the 31st day of December, 1917, and shall immediately after the first day of January, 1918, furnish the same to the Commission.

Fourth, that these causes be retained on the docket in order that the commission may make such further order and take such further proceedings therein, especially in relation to the matter of fire protection, as it may deem proper.

The errors assigned and relied on by petitioner are, first, that the commission adopted the report of its chief statistician, and disregarded the reports and testimony of Alvord and Miller, expert engineers chosen respectively by the water company and the
1366 City of Bluefield in fixing the value of its property for rate making purposes; second, that by the value so fixed and the rates for water service prescribed by said order, petitioner will be deprived of just compensation for said service and of its property without due process, and the equal protection of the law, contrary to clause 1, of the fourteenth amendment to the federal constitution.

While it does appear from the opinion filed by the commissioners and made part of the record that they adopted as the present value of said property the estimate of their chief statistician, $360,000.00, rather than that of either Alvord or Miller for the purpose of determining what rates would be reasonable and just for the services to be rendered, the order does not otherwise attempt to finally and forever bind the commission or the water company to this valuation. Moreover, it is evident that the rates prescribed, though based on that valuation, were intended to be, and by the order were made experimental only and not final, and it would be impossible for us now, as it was for the commission at the date of its order, to determine what earnings the rates prescribed will actually produce. For aught that now appears they may yield a much larger gross and net income than that estimated and leave nothing of which the petitioner can justly complain. These experimental rates were increased rates which petitioner was permitted to charge over those previously in force, and in advance of the ascertained result of the experiment, we could not say they are confiscatory and void.

By analogy to the judgments and decrees of court provisional orders of the public service commission not final in character but reserving for future adjudication matters in litigation, should not be treated as final here and as furnishing basis for action under

section 16 of the statute. Benedum v. First Citizens Bank, 72 W. Va. 124; Richmond v. Richmond, 62 W. Va. 206. The order complained of has no such finality as to preclude the commission from hereafter disregarding its findings and from changing the entire basis of its order on final hearing.

1367 The valuation of the property of a public service corporation for rate making purposes and the fixing of rates for tolls and charges for the services to be rendered are purely legislative acts and are not the subject of judicial inquiry, except in so far and in so far only as may be necessary to determine whether such rates are void on constitutional or other grounds. And we decided in United Fuel Gas Co. v. Public Service Commission, 73 W. Va. 571, construing said section 16, of the Public Service Commission Act, that the jurisdiction given this court thereby is not as upon appeallate process by appeal or writ of error, but as upon original process, and limited to matters purely judicial, and as not including matters purely administrative, executive or legislative, not conferred by the constitution. So that in advance of the final order of the commission based on the experiment inaugurated by its order here complain4d of we are bound to withhold any exercise of the jurisdiction conferred upon us to suspend, modify or prohibit the enforcement of said order.

In reaching this conclusion we are fully justified by recent adjudication of the Supreme Court of the United States, in which the injunctive process of a court of equity was denied under like or similar circumstances. We refer to Des Moines Gas Co. v. Des Moines, 238 U. S. 153, and Knoxville v. Knoxville Water Co., 212 U. S. 1.

We are, therefore, of opinion to deny the relief prayed for and to dismiss the petition, but without prejudice to the rights of the petitioner upon final hearing of said proceedings before the Public Service Commission.

1368 STATE OF WEST VIRGINIA:

I, Wm. B. Mathews, Clerk of the Supreme Court of Appeals of West Virginia, do certify that the foregoing is a true copy of the record and proceedings in the therein entitled cause as the same remains upon the records and files of the said Supreme Court of Appeals, and do further certify that the papers, evidence, documents and records, together with the statements of the reasons for the entry of the order of the Public Service Commission, are the same that have been certified to my said office by the Secretary of the Public Service Commission of the State of West Virginia.

In testimony whereof, I hereto set my hand and affix the seal of the said Supreme Court of Appeals of West Virginia, at Charleston, Kanawha County, this 7th day of January, 1922, and in the 59th year of the State.

[Seal of Supreme Court of Appeals, West Virginia.]

WM. B. MATHEWS,
Clerk Supreme Court of Appeals.

Before the Public Service Commission of West Virginia.

Case No. 59. Formal Complaint No. 58.

CITY OF BLUEFIELD

vs.

BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY

and

Case No. 368.

In re BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY.

Application for Authority to Increase Rates, Tolls, and Charges for Water.

Report of the Applicant, Bluefield Water Works and Improvement Company, Showing an Accurate Account of the Receipts from Its Water Business under the Schedules of Rates Fixed by said Public Service Commission, as Well as the Expenses of Operation from the 1st Day of May, 1917, to the 31st Day of December, 1917, Inclusive.

1369

Bluefield Water Works and Improvement Company.

Income Statement—1917.

8 mos., 5-1 to 12-31.

Gross revenue.

Water Rents—Private:

	Metered.	Unmetered.	Total.
Ordinary	$27,717.33	$3,372.68	$31,090.01
Fire Protection	.....	466.66	466.66
City Hall	76.50	.....	76.50

Income Statement, 1917.—Continued.

Water Rents—Municipal:	Metered.	Unmetered.	Total.
Hydrants	.....	3,333.33	3,333.33
Sprinkler	212.72	.....	212.72
Total Water Rents	$28,006.55	$7,172.67	$35,179.22
Miscellaneous Earnings:			
Turning on Fees	.....	.....	115.00
Rent	.....	.....	43.85
Interest	.....	.....	193.65
Total Gross Revenues	$28,006.55	$7,172.67	$35,531.72
Operating expenses:			
Salaries—Bluefield	$3,400.00		
Salaries, Office Expense, & Rent—Philadelphia	1,000.00		
Office Expense—Bluefield	478.49		
Rent—Bluefield	272.13		
Wages—Enginemen & Fireman	1,738.96		
Wages—Inspector	650.00		
Coal, Freight, etc.	2,638.75		
Insurance	160.27		
Legal	204.35		
W. C. and P. S. C. Funds	43.45		
Stable and Laboratory	22.64		

Stable and Laboratory	22.64		
Taxes	2,661.64		
Maintenance and Repairs	4,025.33		
		$17,296.01	
Miscellaneous:			
Traveling	27.26		
War Insurance	211.62		
Public Utilities Ass'n	16.67		
Water Purchased	4,957.05		
Plumbers' Bonds	20.00		
Increase Rate Case, ⅔ of $2,286.95	1,524.63		
		$6,757.23	
Total Operating Expense and Taxes			$24,053.24
Other deductions:			
Depreciation ⅔ of $4,401.37			$2,934.25
Total Disbursements			$26,987.49
Surplus for eight months			$8,544.23

1370 STATE OF WEST VIRGINIA,
County of Mercer, To wit:

This day William McCarthy, Superintendent of the Bluefield Water Works and Improvement Company, applicant named in the foregoing report, personally appeared before me and being by me first duly sworn, says that the foregoing report and statement of the receipts from the water business of the said applicant, in accordance with the schedule of rates fixed by the Public Service Commission, as well as expenses of operation, is true and correct.

WM. McCARTHY,
Superintendent.

Taken, subscribed and sworn to before me, this the 1st day of February, 1918.

W. E. ROSS,
Notary Public for Mercer County, West Virginia.

1370½ Bluefield Water Works and Improvement Company.

Supplemental Report Made to the Public Service Commission by H. E. Nease, Statistician.

Filed April 4, 1918.

1371 Bluefield Water Works and Improvement Company.

Supplemental Report.

In accordance with the provisional order of The Public Service Commission of West Virginia, heretofore entered in the rate case of the Bluefield Water Works and Improvement Company, the said company filed the following Income Statement showing revenues and expenses under the rates prescribed in the said provisional order, for the eight months' period ending December 31, 1917.

Income Statement—1917.

8 mos., 5-1 to 12-31.

Gross revenue.

	Metered.	Unmetered.	Total.
Water Rents—Private:			
Ordinary	$27,717.33	$3,372.68	$31,090.01
Fire Protection	.....	466.66	466.66
City Hall	76.50	.....	76.50
Water Rents—Municipal:			
Hydrants	.....	3,333.33	3,333.33
Sprinkler	212.72	.....	212.72
Total Water Rents	$28,006.55	$7,172.67	$35,179.22
Miscellaneous Earnings:			
Turning on Fees	.....	.....	115.00
Rent	.....	.....	43.85
Interest	.....	.....	193.65
Total Gross Revenues	$28,006.55	$7,172.67	$35,531.72
Operating expenses:			
Salaries—Bluefield	$3,400.00		
Salaries, Office Expense, & Rent—Philadelphia	1,000.00		
Office Expense—Bluefield	478.49		
Rent—Bluefield	272.13		
Wages—Enginemen & Fireman	1,738.96		

Income Statement, 1917.—Continued.

	Metered.	Unmetered.	Total.
Wages—Inspector	650.00		
Coal, Freight, etc.	2,638.75		
Insurance	160.27		
Legal	204.35		
W. C. and P. S. C. Funds	43.45		
Stable and Laboratory	22.64		
Taxes	2,661.64		
Maintenance and Repairs	4,025.33		
		$17,296.01	
1372 Miscellaneous:			
Traveling	27.26		
War Insurance	211.62		
Public Utilities Ass'n	16.67		
Water Purchased	4,957.05		
Plumbers' Bonds	20.00		
Increase Rate Case, ⅔ of $2,286.95	1,524.63		
		$6,757.23	
Total Operating Expense and Taxes			$24,053.24
Other deductions:			
Depreciation ⅔ of $4,401.37			$2,934.25
Total Disbursements			$26,987.49
Surplus for eight months			$8,544.23

This statement has been compared and checked by the Statistician of the Commission and all items found to be normal and correct with the exception of the item "Water Purchased $4,957.05." This was found to be an arbitrary charge, being at the rate of five cents per thousand gallons of water purchased from the Bluefield Valley Water Works Company, an affiliated company organized and developed for the purpose of furnishing the Bluefield Water Works and Improvement Company with an additional supply of water. The actual cost of supplying the water covered by this item, including 6% on the investment of the Bluefield Valley Water Works Company, was $3,126.12, and in the opinion of your Statistician is the amount properly chargeable against the Bluefield Water Works and Improvement Company for this service.

Your Statistician is also of the opinion that the item of $1,524.63, account "Increase Rate Case" should not be considered in connection with this rate case as an operating expense item, but should be considered as a liability properly to be borne by the stockholders of the company. With these two items changed to correspond to the above view the total operating expenses and taxes for the eight months period would be $20,697.68 instead of $24,053.24. There is also some question as to whether or not the item of $211.62 for "War Insurance" is a proper item to be considered in a rate case but the item being small it has not been deducted.

1373 If $20,697.68 is considered as the proper amount for operating expenses, the net earnings, before deducting depreciation, for the eight months period would be $14,834.04. On this basis the earnings for twelve months would be $22,251.06.

In the said provisional order the value of the property of the company for rate purposes was fixed at $360,000.00. Some slight additions have been made to the properties since the date of the order of the Commission, but such additions would be covered by depreciation and in the opinion of your Statistician there is no reason to alter the said value of $360,000.00.

Assuming $360,000.00 to be the proper value of the properties of this company for rate purposes, the company is earning, before charging off depreciation, approximately 6% net. Your Statistician is of the opinion that this is not an ample return for a water company operating under conditions such as surround the Bluefield Water Works and Improvement Company.

Respectfully submitted,

H. E. NEASE,
Statistician.

1374 The Public Service Commission of West Virginia.

Charleston.

Case No. 368.

BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY.

Application to Change Rates.

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1375 The Public Service Commission of West Virginia.

Charleston.

Case No. 368.

BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY.

Application to Change Rates.

Charleston, West Virginia,
Thursday, April 4, 1918.

Transcript of Testimony Adduced at a Hearing in the Above-styled Cause Held on Thursday, the 4th Day of April, 1918, at the Offices of the Commission, in the Capitol Building, in the City of Charleston, West Virginia, Before the Public Service Commission.

Present:

The Petitioner, Bluefield Water Works & Improvement Company, by John Kee and Joseph M. Sanders, its counsel.

The Respondent, City of Bluefield, by John R. Dillard, Esq., its counsel.

The Public Service Commission by E. G. Rider, Chairman; E. F. Morgan, Commissioner, G. R. C. Wiles, Commissioner.

R. O. Nuzum, Reporter.

1376 Thereupon the Petitioner, Bluefield Water Works and Improvement Company, to maintain the issue in its behalf, adduced the following testimony:

Thereupon came A. L. RHOADS, a witness of lawful age, who, being first duly sworn, testified as follows:

Direct examination.

By Judge Sanders:

Q. Mr. Rhoads, where do you live?

A. I live in Bluefield.

Q. If you have any connection with the applicant Bluefield Water Works & Improvement Company, I wish you would say what it is.

A. I am Cashier and general office assistant to the Superintendent.

Q. And bookkeeper for the Bluefield Water Works and Improvement Company at its City of Bluefield office?

A. Yes sir.

Q. How long have you held this position with the said Water Company?

A. About 10 years.

Q. Were you the bookkeeper and Cashier and assistant in the office of the applicant company from the 1st of May, 1917, to the 31st day of December, 1917?

A. Yes sir.

Q. In pursuance to the decision of the Public Service Commission of West Virginia, rendered on April 24, 1917, the Water
1377 Company was required to keep an accurate account of the receipts from its water business under the schedule of rates fixed by the Commission, as well as the expenses of operation, from the 1st day of May up to and including the 31st day of December, 1917, and file the same before the Commission immediately after the 1st day of January, 1918——

A. Yes sir.

Q. Did the applicant company keep such an account?

A. Yes sir, they did.

Q. I hand you an account which is endorsed thereon "The Public Service Commission—Secretary's Office—February 11, 1918—Received", and ask you if that is a copy of the account kept by the Water Company for that time and between those dates,—That is, the 1st day of May to the 31st day of December, 1917?

A. Yes sir, it is.

Q. And is that a correct account of what it purports to show, so far as you know?

A. To the best of my knowledge and belief.

Q. I wish you would please file this report or account as a part of your evidence, marked "Exhibit—Report of Water Company".

A. I file this report as requested.

(And the said report or account is hereby accordingly filed as a part of the testimony of this witness, marked "Exhibit—Report of Water Company".)

1378 Q. This report shows, under the head of Gross Revenue, Water Rents, Private, Ordinary, under Metered account, $27,717.33. I wish you would please state whether or not that item of this report and account is correct?

A. Yes sir, it is.

Q. And what does that item represent?

A. That covers,—that charge of $27,717.33 covers the ordinary metered charges at the rate prescribed by the Commission for us to charge during that period, for the eight months, May 1st to December 31, 1917.

Q. Is that the total amount received during that time?

A. No sir. That wouldn't be the total amount received. That is the total amount earned during that time.

Q. The total amount earned?

A. Yes sir, at that rate and under that heading. "Ordinary—Metered" accounts.

Q. I see then, under the head of "Unmetered", and item of $3,372.68. Is that a correct account, Mr. Rhoads?

A. Yes sir, that is the flat rate charge, the ordinary flat rate charge.

Q. And for what time?

A. The same period—May 1, 1917, to December 31, 1917—8 months.

Q. These two items, I believe, total the sum of $31,090.01, do they not?

A. Yes sir, that is correct.

1379 Q. Now you say that that doesn't represent the amount collected, I believe?

A. No, that represents the amount accrued.

Q. The amount accrued?

A. Yes sir; the earnings.

Q. That is after the deduction of operating expenses shown in the account?

A. No sir.

Q. Just explain that, please.

A. That is the total gross revenue of the ordinary—by the ordinary, I mean all the general consumers in the town, not taking into account the others enumerated under this heading—that is the gross revenue on the ordinary metered accounts, accrued revenue.

Q. Does the $3,372.68 item—is that correct?

A. That is correct, yes sir.

Q. I wish you would make a fuller explanation of this matter of the collection of the $31,090.01, to which you referred. What do you mean by that?

A. This $31,090.01 is the total accrued water rents for the metered and unmetered or flat rates during that period. This is the earnings for that period, covering the eight months.

Q. But that amount, you mean to say, had not been actually collected?

A. It has by now, yes sir.

1380 Q. But at the time of the making of the report it had not been actually collected?

A. No, it had not.

Q. Now, I see an item of $466.66 under "Unmetered," what is that?

A. That is private fire protection,—a private fire protection charge for that same period.

Q. Is that correct?

A. Yes sir.

Q. I see an item of the City Hall, $76.50, metered. Is that correct?

A. Yes sir. That is the charge against the City Hall, Bluefield, for that period, amount of water consumed, used.

Q. The Water Rents—Municipal—Hydrants item of $3,333.33. State whether or not that item is correct?

A. That item is correct. And it covers the fire hydrant charge against the City of Bluefield for the period of eight months.

Q. An item under the head of "Sprinkler," $212.72. Is that item correct?

A. Yes sir. This item covers the amount of water used by the sprinkling cart, street flushing, during that period.

Q. These items about which I have asked you aggregate the sum of $35,179.22. That is correct, is it, Mr. Rhoads?

A. Yes sir, it is. That covers the total water rent charges

1381 for the eight months.

Q. From May 1, 1917, to and including December 31, 1917?

A. Yes sir. Practically that. We read the meters about the 20th of the month. Practically, we have it for that period.

Q. I see under the head of Miscellaneous Earnings, Turning on Fees, $115.00. What is that, and state whether or not that is correct?

A. The amount is correct. That covers charges for turning off and on water for various reasons during that period.

Q. You have an item here for Rent. Do you know anything about that?

A. Yes sir. That item of $43,85 covers rent that we received from a tenant who lives on our property Known as the Henry Bailey Farm.

Q. You state that the item of $35,179.22 is the total amount of water rents from the 1st day of May, 1917, to the 31st day of December, 1917, inclusive. I wish you would state whether or not those charges were made under and pursuant to the rate fixed by the Public Service Commission of West Virginia in its decision of April 24, 1917?

A. Yes sir, it was. Those charges represent and cover this recent ruling of the Commission.

1382 Q. And the plant, during that time, was operated under the rates fixed by the Commission in its decision of April 24, 1917?

A. It was, yes sir.

Q. Under the head of Operating Expenses, as shown on said report, I see an item there of office expenses, Bluefield, $478.49. What do you know about this item, if anything, Mr. Rhoads?

A. I don't believe that I could answer covering the whole charge, but they are miscellaneous office expenses of various kinds, postage, etc., janitor's expenses and various expenses, miscellaneous expenses, coal and heating; just various expenses.

Q. That item, then, Mr. Rhoads, is a correct item, is it?

A. Yes sir, it is.

Cross-examination.

By Mr. Dillar:

Q. The last item, Mr. Rhoads, of which you spoke, Office Expenses—Bluefield. What does that consist of?

A. It consists of general miscellaneous expenses, such as Janitor's fees, office heating, cleaning, etc., postage; general miscellaneous office expenses.

Q. In regard to the $3,372.68 item *fir* unmetered water, I believe you said that was water you furnished on a flat rate?

1383 A. Flat rate basis, yes sir.

Q. What do you mean by that?

A. Those are customers who do not have meters.

Q. Why aren't all consumers metered?

A. We have not been able to meter all our consumers. They are pretty well all metered.

Q. Can you state why you have not been able to put all of your services on the metered system?

A. I think we have some 540 flat rate taps that have not been metered. We have not been able to meter all of those consumers during this last year or two years. We have placed meters wherever a consumer has requested, and practically all of our new taps are metered, but we have not been able to meter them all yet. It is the compan-'s intention, I think to meter all the consumers.

Q. It is the policy——

A. It is the policy of the company to meter all consumers, as I understand.

Q. How many taps did you say that you had that were not metered?

A. I said 540. That was at the end of February,—February 28, 1918. I would rather correct that and make it,—well, it was 539, January 31, 1918.

Q. You have no way of telling, have you, Mr. Rhoads, how much water was used by the patrons of your company who are not under meter, have you?

A. No sir. We estimate that.

1384 Q. There could be a great amount of water wasted by these taps, who are not under the meter service, that you would not know about, couldn't there?

A. Well, the majority of those consumers are consumers who have not more than one hydrant and that is generally located in the yard, or, in other words, outside of the house, and if there is much waste, there, our inspector or some of our men would notice it, There could be some waste that we wouldn't know of, but I don't think there could be much.

Q. You are not in position, then, to state about how much water is used by the unmetered consumers?

A. I couldn't say exactly, no sir. We just estimate it.

Q. How soon do you think it will be before your company requires all of your patrons to use metered services?

A. Well, the price of meters and labor is high at the present time, and I imagine as soon as they can afford it.

Q. Then the reason that you are not metering all the services is on account of your regard for the patrons?

A. Yes sir.

Q. Are you able to state how many times you cut off and cut on water for which you charged the fees aggregating $115.00 during the eight months?

1385 A. Well, I couldn't tell you exactly, Judge, no sir; not now. Most of those charges represent fifty and seventy-five cent fees. This total $115.00 represents charges of fifty and seventy-five cents. Most of those times the water was turned off and on by request by the various consumers and owners.

The witness is excused.

Thereupon came WILLIAM MCCARTHY, a witness of lawful age, who, being first duly sworn, testified as follows:

Direct examination.

By Mr. Kee:

Q. Mr. McCarthy, what connection, if any, have you with the Bluefield Water Works and Improvement Company?

A. I am Superintendent of the Bluefield Water Works and Improvement Company.

Q. How long have you been connected in an official capacity with this company?

A. I will be with the Bluefield Water Works and Improvement Company as Superintendent fifteen years the first of next July.

Q. During this time, where have you made your headquarters?

A. At Bluefield.

1386 Q. You have, then been in connection with the company, in an active capacity, during all of this time?

A. Yes sir.

Q. Mr. McCarthy, a report has been filed with the Commission

here by the Bluefield Water and Improvement Company, showing a statement of income received by that company for the period of eight months from May 1, 1917, to December 31, 1917. Upon that report, I call your attention to an item of office expense, Bluefield, amounting to $478.49. I will ask you to state whether or not you know anything about that item?

A. All of the expense of the Bluefield office, such as postage, stationery, janitor service, fuel and many other such items are charged to Office Expense, Bluefield. These items are incurred at Bluefield, and the bills covering them are O. K.'d by us, that is myself and Mr. Rhoads, and are forwarded to Philadelphia. So far as I know, in this case, I think it is correct, our Philadelphia bookkeeper keeping the books.

Q. The items going to make up this account of $478.49 originate at the office at Bluefield?

A. Yes sir, at Bluefield.

Q. Are O. K.'d by you and forwarded by you to the Philadelphia bookkeeper?

A. Yes sir.

1387 Q. Did you, from the office at Bluefield, furnish the bookkeeper at Philadelphia with correct information with which to make up this item?

A. Yes sir, I did.

Q. I notice an item on this report marked "Wages—Engineer and Fireman," $1,738.96. What does that item cover?

A. That item covers the wages paid to the engine man and fireman at our Ada pumping station.

Q. They are working at this pumping station in connection with the operation of the Bluefield Water Works plant, are they?

A. Yes sir.

Q. And is that item correct?

A. That item is correct, so far as I know.

Q. And state for what length of time does that item represent wages paid?

A. This item represents wages paid during the eight months covered by this report which we have now before us, that is from the 1st day of May, 1917, to the 31st day of December, 1917.

Q. There is an item in this report of $650.00 marked "Wages of Inspector." What does that item cover, Mr. McCarthy?

A. That item covers the wages paid during the same eight months referred to to the meter inspector, meter tester, meter reader and general inspector of lines and service pipes in the City of Bluefield.

1388 Q. Is this inspector, as well as the engineman and fireman about who you have testified, necessary employes of the Bluefield Water Works and Improvement Company?

A. Yes sir.

Q. Is that item of $650.00 correct, Captain?

A. So far as I know, it is. I furnish the information to the bookkeeper and the information that I furnish the bookkeeper is correct.

Q. The next item is one of $2,638.75, reported as having been expended for coal, freight, etc. What does that item cover?

A. That item covers the cost of coal consumed,—furnished and consumed,—together with the item of freight and war tax for the same Ada Pumping Station referred to in the item of wages.

Q. Was that a necessary item of expense in the conduct of the business of the Bluefield Water Works and Improvement Company?

A. Yes sir, that was a necessary item.

Q. Is that item correct and did you furnish the correct information in reference thereto to your Philadelphia bookkeeper?

A. I furnish the correct information to our bookkeeper and the item is correct, to the best of my knowledge and belief.

Q. An item of $22.64 appears in the report, marked "Stable
1389 and Laboratory." What was that item for?

A. That covers item of expense in connection with our laboratory in Bluefield, during these same eight months.

Q. Is that a correct item, showing a necessary expenditure?

A. That is a necessary expenditure and a correct item, so far as I know and believe.

Q. The item of $4,025.33 for Maintenance and Repairs occurs in the report. Will you please explain this expenditure?

A. This money has been expended in the ordinary maintenance and repairs of the plant during the eight months covered by the report. It is made up of items made monthly and returned to our Philadelphia office with my O. K. to the bookkeeper, the same as the other items, and, so far as I know and believe, are also correct.

Q. Were all of these expenditures to which you have testified made under your supervision and subject to your approval?

A. They were.

Q. And were they necessary expenditures in the conduct of the business of the Bluefield Water Works and Improvement Company?

A. And they were necessary expenditures, necessary repairs, and so on.

Q. Were all of these items under the head of operating expenses expended during the period of eight months from May 1,
1390 1917, to December 31, 1917?

A. They were, to the best of my knowledge and belief.

Cross-examination.

By Mr. Dillard:

Q. There is a small item, Mr. McCarthy, "W. C. and P. S. C. Funds," $43.45, under the head of operating Expenses. What is that for?

A. That is Workmen's Compensation Insurance Premium, I believe they call it.

Q. And that is not included in the insurance item above of $160.27?

A. No, sir. That is in addition.

Q. And your item of taxes, $2,661.64. Was that pro rated; and

does that item only cover the eight months included in the period covered by your statement?

A. Well, that item, I didn't have anything to do with fixing up that item. That is made up from the tax tickets in the Philadelphia Office, and Mr. Kurtz can testify to that.

Q. You testified, I believe, a month ago, that all of the items under operating expenses were correct?

A. Yes sir, I believe they were.

Q. You don't know, then, about the Insurance item of $2,661.64, do you?

A. The Taxes, you mean?

1391 Q. Yes sir, the Taxes.

A. No, I didn't handle that, I am sure.

Q. You paid more for your coal during this eight months than you had previously paid, didn't you, Mr. McCarthy?

A. Well, we paid much more than we had paid in years past. Our coal has increased in cost very much, beginning with a period, say, about six months before this statement was taken off. In other words, I think about September, perhaps, of 1916, our coal costs began to increase and have increased very rapidly since; maybe prior to that time. I don't recall just when the price of coal started to go up.

Q. And is not your Office Expense for Bluefield of $478.49 for two-thirds of the year high, considering the office space occupied by your company?

A. Well, I would hardly think so, Judge. Well, I don't just recall now what our postage bill is monthly, but it is pretty close to $30.00 a month; not far from $30.00—$25.00 or $30.00 per month. It used to run about $40.00, but we have cut that considerably, and I think it runs now somewhere in the neighborhood of $30.00. Our janitor costs are about $8.00 a mouth, and during the winter season we burn about a ton of coal a week; and then a little added for stationery, supplies. I think it is a pretty reasonable figure—telephone rents come in there too.

1392 Q. Is your coal expense for your office separate from your item of coal, freight, etc., $2,838.75, as charged on this bill?

A. Yes sir, it is separate.

The witness is excused.

Thereupon came A. L. RHOADS, who was recalled for further

Direct examination.

By Judge Sanders:

Q. Mr. Rhoads, I wish you would please state about how close did you make your collections for the period of eight months referred to in your evidence, May 1, 1917, to December 31, 1917. What amount of the total did you fail to collect, I mean?

A. We always collect very closely. During this period, or during the year rather, we charged off as losses $41.45. This amount, you

understand, is for the whole year of 1917. Our losses at this time are a trifle more than they used to be when we rendered our accounts monthly. During the time that we rendered our accounts monthly, we charged off $10.00 to $15.00 a year; perhaps less, *less*, as
1393 losses. As we now render our accounts quarterly, every three months, we lose a little bit more,—the difference between about $10.00, the amount we used to lose, and the amount I stated, $41.45.

Q. That is for the whole year?

A. For the whole year, yes sir. And during the same year,—that is, during the whole year 1917, we collected $11.29 that had been charged off previously in other years,—making our net loss that year $30.16.

Q. When you say losses, you mean losses from failure to collect water rents?

A. Uncollectible accounts, yes sir.

Q. How do you account for your losses being greater where you collect by the quarter than where you collected by the month?

A. When you collect monthly, you can bill closer. When you collect,—or when you send out your accounts every three months, a person has more of a chance to get away and not pay his water accounts.

Cross-examination.

By Mr. Dillard:

Q. Your office expenses should be less since you adopted the method of rendering your accounts quarterly than they were
1394 when you rendered the accounts monthly, should they not?

A. Only in reference to the amount of postage would it be less.

Q. Well, it *w*hould be considerably less on that account, shouldn't it?

A. Yes sir.

The witness is excused.

Thereupon came HARRY M. KURTZ, a witness of lawful age, who, being first duly sworn, testified as follows:

Direct examination.

By Judge Sanders:

Q. Mr. Kurtz, what connection have you, if any, with the Bluefield Water Works and Improvement Company?

A. Secretary and Treasurer.

Q. How long have you held this position with the Bluefield Water Works and Improvement Company?

A. About five years.

1395 Q. Were you such Secretary and Treasurer from the 1st day of May, 1917, to the 31st day of December, 1917?

A. Yes sir.

Q. As such Secretary and Treasurer, does that include the bookkeeping for the company?

A. Yes sir.

Q. Are you the bookkeeper of the company, and were you such bookkeeper, during the eight months from the 1st of May, 1917, to the 31st of December, 1917, referred to?

A. Yes sir.

Q. I see the total water rents for that period are $35,179.22. Is that correct?

A. I believe it is, as I received the amount from the Bluefield Office and entered it in our general books. I believe it to be correct.

Q. That was the amount earned for water rents under the rates fixed by the Public Service Commission of West Virginia in its decision in this case? Is that right?

A. Yes sir.

Q. I see, under the head of Miscellaneous Earnings, in the report of the Water Company to the Public Service Commission, an item for interest of $193.65. What is that item of interest.

A. Interest on bank deposits.

Q. Make a full explanation of that item, please.

A. Well, it is interest on case in bank; our bank balances.

1396 Q. Under the head of Operating Expenses, I see an item Salaries, Bluefield, $3,400.00. Please explain that item to the Commission?

A. It is the salaries of the superintendent and the cashier and stenographer.

Q. For what period does that item cover, and is that a correct item?

A. That is for eight months,—May 1, 1917, to December 31, 1917.

Q. Is it correct?

A. It is.

Q. Was that amount actually expended by the company for services?

A. It was.

Q. The next item under the head of Operating Expenses shown on said report I see is Salaries, Office Expense and Rent, Philadelphia, Office, $1,000.00. Please explain that item.

A. That *it* the amount allowed—that is two-thirds of the amount allowed by the Commission for Philadelphia Office Expense and Salaries, for the two-thirds of the year.

Q. This was expended for the eight months, May 1, 1917, to December 31, 1917?

A. Yes sir.

Q. And was allowed in accordance with the decision of the Commission rendered in this case?

A. Yes sir.

1397 Q. The next item under the head of Operating Expenses I see is Office Expense, Bluefield, $478.49. Did you enter these items in your books?

A. Yes sir, I did.

Q. And where did you get the information—from the Bluefield office?

A. Mr. McCarthy, Superintendent, and Mr. Rhoads, Cashier.

Q. Were these items correctly entered in your books?

A. They were.

Q. I see Rent under this same heading, Bluefield, $272.13. Please explain that item to the Commission and state whether or not it is a correct item—correct charge?

A. That is the rent charge for the storage lot on Raleigh Street, where the company stores its material.

Q. Is that a reasonable rent?

A. I think it is.

Q. Please state whether or not it is necessary for the operation of the company's business?

A. Absolutely.

Q. The next item under this same heading is Wages of Enginemen and Fireman, $1,738.96. Please explain that item to the Commission and state whether or not that is correct?

A. That is correct. It is the amount paid the engineer and fireman at Ada Pump House, received from the Superintendent.

1398 Q. For the period of eight months from the 1st of May to the 31st of December, 1917?

A. Yes sir.

Q. And the item of rent $272.13, was for the same time?

A. Yes sir.

Q. And so of the item of $478.49, Office Expense—Bluefield?

A. Yes sir.

Q. The next item I see is Wages—Inspector, $650.00. Is that a correct item, Mr. Kurtz?

A. Yes sir, it is.

Q. For what period was that expenditure made?

A. For the period of eight months.

Q. May 1st to December 31, 1917?

A. Yes sir.

Q. The next item is Coal, Freight, etc., $2,638.75. Is that item correct?

A. Yes sir, it is.

Q. And for what period was that expenditure made?

A. For the same period.

Q. The next item is Legal Expense, $204.35. Is that item correct?

A. Yes sir, it is.

Q. The next item is W. C. and P. S. C. Funds, $43.45. Is that item correct?

A. Yes sir.

Q. Was that item made for the eight months referred to—May 1, 1917, to December 31, 1917?

A. Yes, sir.

1399 Q. There is an item of Insurance, $160.27. Is that item correct?

A. Yes sir.

Q. And for what period was that expenditure made?

A. The same period.

Q. Stable and Laboratory, $22.64. Is that item correct, and was it an expenditure for the eight months referred to?

A. Yes sir.

Q. I see under the same heading an item for Taxes, $2,661.64. Is that item correct Mr. Kurtz?

A. It is.

Q. Were these taxes paid for the eight months,—May 1, 1917, to December 31, 1917?

A. Propoertioned for that period.

Q. I mean the proportionate part for that period?

A. Yes sir.

Q. Under the same heading I see the item for Maintenance and Repairs, $4,025.33. Is that item correct, Mr. Kurtz?

A. It is.

Q. And was that expenditure incurred for the eight months—May 1, to December 31, 1917?

A. Yes sir.

Q. The total Operating Expenses I see amount to $17,296.01. Is that correct?

A. Yes sir.

Q. Under the head of Miscellaneous, I see the item, Traveling, $27.26. Is that a correct item?

1400 A. Yes sir.

Q. That is for traveling expenses?

A. Yes sir.

Q. Was that incurred during the eight months referred to?

A. Yes sir.

Q. War Insurance, $211.62. Was that an expense incurred during the eight months from May 1st to December 31st, 1917?

A. That was an expense that occurred in the earlier part of the year, but three-fourths proportion for the year was charged to that account.

Q. Two-thirds, you mean?

A. Two-thirds, yes sir.

Q. You charged two-thirds of the whole for the eight months' period?

A. Yes sir.

Q. The next item under the head of Miscellaneous I see is Public Utilities Association, $16.67. What have you to say about that?

A. That is an item of $25.00 for membership—two-thirds of the amount of the total charge.

Q. The total charge would be $25.00?

A. Yes sir.

Q. And that item of $16.67 was charged for the eight months—1st of May to December 31, 1917?

A. Yes sir.

Q. The next item I see under the head of Miscellaneous
1401 was Water Purchased, $4,957.05. I wish you would state whether or not that item is correct and make a full explanation in regard to it.

A. The Bluefield Water Works and Improvement Company purchased from the Bluefield Valley Water Works Company, water. The Bluefield Valley Water Works Company is a Virginia Corporation. The rate was based at five cents a thousand gallons. The amount of water furnished—this $4,957.05 represents eight months of the total charge for the year.

Q. Was it necessary expenditure, Mr. Kurtz?

A. Yes sir.

Q. What did you say the rates were that you were paying for this water furnished by the Bluefield Valley Water Works Company?

A. Five cents a thousand gallons.

Q. I mean this water purchased by the Bluefield Water and Improvement Company, which is covered by the item $4,957.05.

A. Yes sir, five cents a thousand gallons.

Q. Is that a fair rate for the service?

A. I believe it to be, yes sir.

Q. Do you know of any other place where you would get it at that rate?

A. I do not.

Q. In fact, it is obtainable at any other point?

A. I don't think so.

1402 Q. Do you know who the owners or the stockholders of the Bluefield Valley Water Works Company are?

A. Yes sir.

Q. Who are they?

A. The Virginia Land Company and the Virginia Investment Association.

Q. This water plant that you say you have purchased water from and for which you charge in the report referred to $4,957.05 for the eight months from May 1, 1917, to December 31, 1917, is located where?

A. In the State of Virginia.

Q. You say that the Virginia Land Company and the Virginia Investment Association are the owners of the Bluefield Valley Water Works Company?

A. Yes sir.

Q. Are they the owners also of the Bluefield Water and Improvement Company?

A. They are.

Q. Then the two companies are owned by the same persons?

A. Yes sir.

Q. Please state what was the cost of the property of the Bluefield Valley Water Works Company.

A. The total cost to date is $21,000.00. I haven't got the exact figures here but it is——

Q. Have you the figures where you can refer to them?

A. Yes sir. (Witness here refers to certain books.)

1403 A. (continued.) My books show $21,602.75 to December 31, 1917.

Q. Now please state what this plant consists of?

A. The plant consists of 1.96 acres, containing two springs, and a modern electric pump installed in a brick pump house.

Q. Is the Bluefield Valley Water Works Company an incorporated company?

A. It is.

Q. Under the laws of the State of Virginia?

A. Yes sir.

Q. Was this company incorporated for the purpose of acquiring water for the City of Bluefield?

A. It was incorporated for the purpose of supplying water to the Bluefield Water Works and Improvement Company.

Q. For the citizens of the City of Bluefield?

A. Yes sir.

Q. Is it a public service corporation under the laws of the State of Virginia, under which it was incorporated?

A. It is.

Q. Why was it that the Bluefield Water Works and Improvement Company didn't operate this plant in its own name?

A. There were two reasons. One is that the laws of Virginia would not permit, as I understand it, a foreign corporation
1404 locating there as a public utility. The other is that the Bluefield Water Works and Improvement Company did not have sufficient funds to build the plant and would have to borrow and couldn't borrow without being able to pay interest on the money borrowed.

Q. The Bluefield Water Works and Improvement Company, I believe you stated you understood, were not authorized to do a public utility business in the State of Virginia?

A. Yes sir, that is my understanding.

Q. You were advised by your counsel of this, were you?

A. Yes sir.

Q. Do you know the John Bailey Spring?

A. Yes sir.

Q. Is that one of the springs from which the water is brought to the City of Bluefield for the Bluefield Water Works and Improvement Company's Plant?

A. It is.

Q. Where is that spring located?

A. In the state of Virginia.

Q. And in order to reach that spring the plant of the Bluefield Water Works Company would have to be built?

A. Yes sir.

Q. You spoke of the cost of the plant of the Bluefield Valley Water Works Company. Did you include in that cost the
1405 estimated value of the springs which you say it owns?

A. Only the cost that we paid for the springs,—not the estimated value of them.

Q. What is the value of the property of the Bluefield Valley Water Works Company?

A. I couldn't tell you today. Much more valuable than it was when we first bought the spring; since the improvements have been made.

Q. This water runs from the Bailey spring, or from both of the springs which you say the Bluefield Valley Water Works Company owns, by gravity to the pumping station of the Bluefield Valley Water Works Company, in Virginia?

A. Yes sir. They are located right close to the station.

Q. But the water runs by gravity to the pumping station?

A. Yes sir.

Q. This water does not run by gravity into the State of West Virginia, does it?

A. No sir.

Q. And in order to bring the water from these springs into the State of West Virginia, it would have to be done by force?

A. Yes sir, by force.

Q. In a report which was made by Mr. H. E. Nease, Statistician, filed herein April 4, 1918, it is stated that the item referred
1406 to of $45,957.05 is an arbitrary charge, it being a rate of five cents per thousand gallons of water purchased from the Bluefield Valley Water Works Company. I will ask you to state whether or not this is an arbitrary charge, or whether or not this is a reasonable and fair charge for the water purchased from this company?

A. It is not an arbitrary charge. It is a charge which would be considered very reasonable.

Commissioner Morgan: That might be both an arbitrary and reasonable, mightn't it?

Mr. Sanders: It might be so.

Q. Please state how you arrived at that charge?

A. We consider that the five cents per thousand gallons is a reasonable enough charge to make for supplying this water to the Bluefield Water Works and Improvement Company, believing that it would cover the necessary expenses of operation and the interest on the amount invested.

Q. As a fuller explanation of this matter to the Commission, I wish you would please give to the Commission the detailed expenses of the operation of this plant, that is, the plant of the Bluefield Valley Water Works Company?

A. Well,——

Q. I mean that I want the statement of the operating expenses covering the eight months' period from the 1st day of May to
1407 the 31st day of December, 1917, inclusive.

A. I haven't the statement completed, but I will file it with my deposition. I, of course, have it here in the books from the beginning up to December 31, 1917.

Q. Also, I wish you would please include in this statement of operating expenses, the cost of Maintenance and Repairs.

A. Yes sir.

Stipulation.

Inasmuch as there appears to be some doubt as to whether or not the report of Mr. H. E. Nease, Statistician, of April 4, 1918, is a part of the record, it is agreed between counsel representing the respective parties hereto that the same may be filed and made a part of the record, without being binding on either party, but subject to such weight as it may appear upon its face to be entitled to.

Q. I see under the head of Miscellaneous the item of $20.00 for plumbers' bond. I wish you would please state if that item is correct and if it was an expenditure from the 1st day of May to the 31st day of December, 1917.

A. That was bonds for licensing four plumbers to do the work for the company, but that charge happens to be for the whole year That was an item paid in September; it happens to be for the full year.

1408 Q. Then the correct amount for this item would be two-thirds of the $20.80?

A. Yes sir.

Q. The next item under this head, Increase Rate Case, two-thirds of $2,286.95, being $1,524.63. I wish you would please explain that item of expense.

A. That is the item of expense which it has cost the company to date in this matter of increase in rate. The $2,286.95 represents one-fifth of the total amount, charging it off, say, in a five year period. That is $2,286.95 represents one-fifth of the total; so that the $1,524.63 is two-thirds.

Q. Then the $1,524.63 is for that eight months' period referred to?

A. Yes sir.

Q. What did you say the total expense was?

A. It is over $12,000.00. (Witness here refers to his books of account.) $11,434.74 was the total to December 31st,—the total cost of the case.

Q. What does that include?

A. It is a charge of $271.58, the suit of the City of Bluefield, an amount of $7,550.03 in the rate case, a charge of $2,198.56 under inventory, a charge of $1,414.57 under past costs. Those four items make up the aggregate.

1409 Q. The total operating expenses and taxes, then, is $24,055.24?

A. Yes sir; with that slight difference in the plumbers' bonds.

Q. You have given the total expense of the increase rate case above and have referred to the inventory of the expense. I will ask you if that included taking the invoice of the company's property and the procuring of the expert testimony and counsel fees in the case?

A. It did.

Q. Under the head of "Other Deductions," I see an item, Depreciation, two-thirds of $4,401.37. Please explain that item.

A. That is the amount of depreciation we took for the year 1917.

Q. Was that depreciation calculated according to the decision of the Commission rendered in this case?

A. I don't know what their decision allowed.

Q. They allowed you 2 per cent for depreciation.

A. No, it was not. It is less than that.

Q. Then I see the total disbursements amount to $26,987.49. This is correct with the exception of the small matter in the charge of the item for plumbers' bonds, is it?

A. Yes sir.

Q. The surplus for the eight months I see is $8,544.23. What rate of return would that be to the company on its property
1410 at the valuation fixed by the Commission at $360,000.00?

A. 3.56 per cent.

Commissioner Wiles: That is on the basis of a year?

A. Yes sir.

Mr. Sanders:

Q. That 3.56 is on the basis of a year, I believe?

A. Yes sir.

Cross-examination.

By Mr. Dillard:

Q. You say that the charge of $2,934.25 for depreciation was less than the amount the Commission decreed that your company would be entitled to charge, do you?

A. Yes sir.

Q. I will ask you to state why you charged on this report or account less than the amount the Commission ruled you were entitled to charge for depreciation?

A. Because we simply depreciated certain items, such as machinery and pipe, auto. truck and some other items that I don't recall but not on the total plant.

Q. Why was it that these items depreciated and the other items did not depreciate during the same period?

1411 A. We haven't been in the habit of taking depreciation on the total valuation of the plant.

Q. During the eight months covered by your return to this Commission, you did not expend any portion of the cost for litigating the rate case, did you?

A. Yes sir.

Q. How much?

A. Do you want me to take the year and apportion it, or only what we spent during the eight months?

Q. Since May 1st.

A. We had some from the beginning of the year on, and then we had some from that time on. During that period we only expended $129.15.

Q. What was that for?

A. Well, we have a bill of the Daily Telegraph Printing Com-

pany for $—, and Clerk of the Supreme Court $8.25, a small item that foots up a charge of 92 cents. I suppose that is for telegrams.

Q. That cost was expended in a futile attempt on the part of your company to appeal from the interlocutory order entered in this case, was it not?

A. Well, I suppose those charges were on that account. I couldn't just tell from my books.

Q. Then, during the period of eight months from May 1st, to December 31st, 1917, inclusive, it was not necessary for your company to expend any amount in the increase rate case, as charged in your statement, was it?

1412 A. I don't know. It was a question hard to decide whether it was or not. We had to take the necessary steps to protect ourselves.

Q. But anyhow, you didn't spend but $129.15 during this period?

A. No.

Q. It was necessary for the Bluefield Water Works and Improvement Company to acquire the water from the Bluefield Valley Water Works Company, was it, in order to supply the customers of the City of Bluefield?

A. Yes sir.

Q. And the Bluefield Valley Water Works Company belongs to and is owned by the Bluefield Water Works and Improvement Company, is it not?

A. No.

Q. Isn't it owned by the same incorporators and the same parties who owns the Bluefield Water Works and Improvement Company?

A. Yes sir.

Q. What is the difference between the Bluefield Water Works and Improvement Company owning it and the stockholders of the Bluefield Water Works and Improvement Company owning the Bluefield Valley Water Works Company?

A. Simply because the stockholders could sell either plant and not interfere with the other.

Q. It couldn't do that if the supply from the Bluefield Valley Water Works Company is essential to maintain the supply

1413 of the Bluefield Water Works and Improvement Company?

A. They could do it. If they wish to do it, there is nothing to stop it.

Q. Then your Bluefield Water Works and Improvement Company could not comply with its duties to its patrons in Bluefield, could it?

A. I don't suppose it could, under the circumstances, unless it found some other way of getting sufficient water.

Q. Then, if the same stockholders own both companies and the stockholdes of the Bluefield Water Works and Improvement Company organized the Bluefield Valley Water Works Company for the purpose of complying with its obligations and duties to its consumers, don't you think that Mr. Nease is correct when he takes the position that you should only charge the cost of the water, plus 6 per cent on the investment?

A. No.

Q. You think, then, that, although the same people who owns the Bluefield Water Works and Improvement Company own the Bluefield Valley Water Works Company and organized that company in order to supply a deficiency of the Bluefield Water Works and Improvement Company in its water supply, that this Commission should permit those same stockholders to charge a profit on the necessary water that they obtain from the Bluefield Valley Water Works Company, do you?

1414

A. Well, I don't know just how to answer that question. The Bluefield Valley Water Works Company may some time be called upon to supply other water takers than the Bluefield Water Works and Improvement Company, which, under the charter in the State of Virginia, it would be compelled to do.

Q. But that condition doesn't exist now?

A. Not at present.

Q. Did you furnish this amount of water for which you have charged actually to the consumers in Bluefield from the Bluefield Valley Water Works Company during the last eight months up to December 31, 1917?

A. We delivered it to the Bluefield Water Works and Improvement Company through a venturi meter.

Q. Do you know what disposition they made of it?

A. I suppose that it was delivered to the consumers along with the other water the Bluefield Water Works and Improvement Company gets from Ada.

Q. I asked you a moment ago if you actually delivered it to the consumers?

A. We didn't deliver it to the consumers. We delivered it to the Water Works Company.

Q. You really don't know whether it was all delivered to the consumers or not?

A. No.

1415

Q. You have got a charge in this account under the head of Operating Expenses, Legal, $204.35. What was that for?

A. That was for legal expenses to pay our attorneys at Bluefield.

Q. You stated a moment ago that you only paid one hundred and twenty-nine dollars and some cents in connection with this rate case under this item of $1,524.63 which you have charged against it——

A. That item isn't in connection with the rate case. That is a separate legal charge which we have every year.

Q. What is that item for?

A. It is retaining fees.

Q. What retainer does the Bluefield Water Works and Improvement Company pay annually?

A. $200.00.

Q. Then why have you got charged here $204.35 for eight months?

A. That should be apportioned to the year. The amount wasn't paid until November. That should be two-thirds. That $4.00 and a little more is witness fees, costs, or something of that nature.

Q. Then that item is erroneous to that extent?

A. Yes, sir.

Q. Was the two thirds of $204.35 that you have charged on this statement used and useful to the Water Works and Improvement Company in its service to the public?

A. I should say so.

1416 Q. You have a small charge of $16.67, Public Utilities Association. What did you say that was for?

A. That was membership in the Public Utilities Association. I don't just know the details of that. Mr. McCarthy is more familiar with that than I. It is something organized for the benefit of the utilities in the State of West Virginia.

Q. Was that sum used and useful to the Bluefield Water Works and Improvement Company in its service to the public?

A. I should say that it was; for the information obtained.

Q. Isn't it true that the information your company obtains through this association is only useful to the utility company for the purpose of obtaining increases in rates?

A. Well, I don't know.

Q. You don't know about that?

A. I don't know about that.

Q. You paid too much for the prosecution of this rate case, didn't you?

A. Well, I think it has cost us a great deal of money, but it is not our fault that we have spent it. We were ordered to do all these things which we have done and spent the money on it.

Q. But you weren't ordered to attempt to appeal from the decision of the Commission in this case, were you?

A. No, we weren't. That is a very small amount of the charge.

1417 Q. And that is the only money you spent during the eight months since the rendition of the Commission's opinion in this case?

A. Yes, sir.

Redirect examination

By Mr. Sanders:

Q. The question of the finality of the order of the Commission from which the appeal was taken was discussed by the company and the company's counsel before the appeal was taken, wasn't it?

A. Yes, sir.

Q. And it was then suggested by counsel for the company that the order might be held not appealable, was it not?

A. That is right.

Q. But in order to protect the company, counsel advised that it would be better to have an adjudication on that question. Isn't that correct?

A. That is correct.

Q. And the counsel advised you that it was not safe to allow the

time for taking the appeal to expire without testing the question in the courts, because of the uncertainty of it—isn't that correct?

A. Yes, sir.

The witness is excused.

1418 Thereupon WILLIAM MCCARTHY, a witness heretofore appearing and testifying on behalf of the petitioner, was recalled for further

Direct examination.

By Mr. Sanders:

Q. Mr. McCarthy, I will ask you to state what was the cost of the Bluefield Valley Water Works Company plant and property? What was the cost of its plant?

A. As Superintendent of the construction of that plant—I didn't keep the books you understand—but I did keep memoranda and copies of invoices for materials and from that information and other information that I had at hand, I made up a statement of costs of that plant, and I place the cost at $21,410.25, as against our bookkeeper's account of $21,602.75,—a difference of about nearly $200.00. That could occur in many ways. It might be something that I have overlooked or omitted.

Q. Have you a statement,—an itemized statement of the cost of the construction of the Bluefield Valley Water Works Company plant?

A. I have such a statement.

Q. I wish you would please file that as a part of your evidence, marked "Exhibit Statement."

A. All right, I hereby file it.

1419 Thereupon a statement, entitled "Bluefield Valley Water Works Company—Detail statement of cost entering into the development of the property owned by the Bluefield Valley Water Works Company," etc., was filed as a part of the evidence of this witness, for identification, marked "Exhibit Statement."

Q. Mr. McCarthy, the question has been asked as to whether or not the water purchased, which amounts to $4,957.05, from the Bluefield Valley Water Works Company by the Bluefield Water Works and Improvement Company was actually furnished and supplied to the consumers of the Bluefield Water Works and Improvement Company. Mr. Kurtz stated that this water was furnished to the Bluefield Water Works and Improvement Company. I will ask you to state whether or not this water was supplied to the customers of the Bluefield Water Works and Improvement Company.

A. As stated by Mr. Kurtz, this water was supplied by the Bluefield Valley Water Works Company to the Bluefield Water Works and Improvement Company, who in turn furnished the water to the patrons of the Bluefield Water Works and Improvement Company, or the people of the City of Bluefield.

Q. Including the water which you purchased from the Bluefield Valley Water Works Company, did you have an adequate sup-
1420 ply of water for the citizens of the City of Bluefield?

A. No, we did not. We were short of water last year about three months in the dry season.

Q. Please explain to the Commission just what the conditions were in regard to the water supply to the City of Bluefield last year, and what are the needed improvements to be made to the company's plant and business in order to furnish a proper supply of water to the City and to its inhabitants; make a full statement in this respect.

(Question objected to. Overrules.)

A. The water supply for the City of Bluefield has been short and for about several years it has been apparent to us that the supply of water to the City of Bluefield was going to run short. In 1915, I believe, the City of Bluefield destroyed one of our springs from which we got a considerable quantity of water,—about one-third of a million gallons of water per day,—by turning sewage into it. Now, since that time, every fall we have been short of water, both in the dry weather and in the fall and in cold weather, freezing weather in the winter. Last winter was no exception, of course. We had more cold weather and the shortage was more apparent last winter
1421 than it has been the two winters previously. Now, to say what would have to be done toward increasing the supply of water in the City of Bluefield, I wouldn't like to say positively just at this time just what should be done, because, while we are making a survey now as to what may be found necessary to do in this connection, I haven't that survey completed, haven't got the figures available just yet, but my idea of it just as it stands, giving it to you for what it is worth at this time, would be that the water will have to be impounded by dams. In other words, flood water during wet periods will, of necessity, have to be impounded for use during the dry season, filters being put in to properly prepare the water for use by the public.

Q. Mr. Dillard has asked Mr. Kurtz with reference to a little item of $16.67 for Public Utilities Association and Mr. Kurtz said that you could explain this better than he could answer. I wish you would please explain what this charge is.

A. Well, personally, I think it isn't worth going into that. The Commission understands that very well. The staff [illegible]ngs to it. It is a litle association we have here in West Virgin[illegible]ade up and including members of all utilities in the State that [illegible]ose to become members of it, excepting only the gas people. The gas people
1422 of the State,—I mean by that the natural gas people of the State,—are not members of this particular association. It is an association for the benefit of the utilities, and the utilities of the state can gather once a year and thresh out their problems, you understand, and by intercourse and discussion gain information and help one another to better take care of the intricate questions that arise in the operation and ownership of utilities. Mr. Dillard, I

might add, suggested that it might be for rate making purposes. I have attended several of their meetings and I have not heard anything like that discussed.

Cross-examination.

By Mr. Dillard:

Q. If you were given additional increase, will you be in a position to furnish the additional water to the people of Bluefield that you say is necessary to be furnished?

A. Well, that is a big question. That is a great big question. The policy of the company has always been to meet the reasonable demands made upon it. I have no understanding and no right to believe that that policy has been changed or will be changed.

1423 Now, I believe that our company will meet any demand made upon it that is reasonable and to the extent which they are able. At this particular time, I don't know what they can do. This improvement that we contemplate now will cost considerable money and it will have to be passed on by perhaps more than the company. We want to insist that the City of Bluefield and this Commission as well and the Public Health Department of this State share in the responsibility, and we want their assistance and all the assistance we can get in determining just what shall be done and how it should be done to best take care of the wants and future needs of the City of Bluefield in the way of an adequate water supply, not only in the future but at the present time even.

Q. You will admit, then, that you haven't *not* got an adequate water supply for the City of Bluefield, won't you?

A. We will admit that at the present time our supply is short at certain seasons, but, as I have already stated, this shortage developed by reason of one of our springs being unexpectedly put out of commission and catching us in that way unexpectedly.

1424 Q. I believe that you stated that the City of Bluefield caused the sewage to be turned into the spring. Was that done officially by the City of Bluefield?

A. I suppose that it was. It was done by the City Street Commissioner, and I suppose that would be by the City.

Q. Did you make any effort to find out if there was any action upon the part of the City of Bluefield to cause your spring to be put out of commission?

A. I know that the change in the course of the sewage was considered for some time. It was done at the suggestion of the City Engineer. At least, he told me that when he took the matter up and suggested it to the City of Bluefield, that he didn't have any idea that it was going to result in damage to the spring. So I presume it had some official sanction.

Q. When was that done?

A. I think that it was done some time in the year of 1915.

Q. You made no reference to it at any former hearing, in any former evidence before this Commission in this case, did you?

A. Yes sir, I think you will find it in the evidence in the case.

Q. Then, since 1915, you have been short in your water
1425 supply to the inhabitants of the City of Bluefield, have you?

A. In dry seasons.

Q. And in all of that time you have made no effort to remedy that shortage or supply the necessary water, have you?

A. Well, we built this pumping station in South Bluefield about that time. We had in mind that that would more nearly offset this spring that was destroyed by sewage, and in my opinion the amount of water that we get from this station of the Bluefield Valley Water Works Company station compensates in a large measure for the amount of water ruined by this sewage.

Q. Then you would have been short anyway, although you have supplied the quantity of water taken away from you, as you say, by the City of Bluefield, you would still be short? You are still short?

A. We had in mind the building of this station and were going to build it anyway whether this spring was destroyed or not. We had no idea of the spring being destroyed. We saw that we were needing more water. This spring being destroyed took away from us the same quantity of water practically that we got from the new station, and our business is increasing each year, has in the
1426 past year at least, rather rapidly, and it was necessary, of course, to look for additional water. Now, since that time,—I don't believe I have fully answered your question,—I would say that we haven't made any effort to get any additional water for the reason that there is no additional water within the limits of our means of obtaining at this time.

Q. Well, you admit then that during dry or very cold seasons that you can't supply the requisite amount of water and at the same time you won't tell this commission that, if they give you the additional increase you ask for, that you will supply this additional necessary water?

A. I will say that we are short of water. I have stated that. I am not in position to answer that question. I am not the whole company or the whole court, you understand.

Q. You have been delegated the authority to represent your company in this whole case, haven't you?

A. Not in the expenditure of one hundred thousand dollars or perhaps more. I wouldn't consider that I was delegated to say what we would do in a case of that kind. I did say, and I will repeat that, that it has been the policy of the company to meet its obligations in Bluefield. We have always done that, and I see no reason why I should think the company would do anything else at this time, providing they are able. I want it understood that we are not
1427 in position right now, and neither is any other utility at this particular time, owing to the present conditions, to promise—for instance, we might have the money and might not be permitted to use it. I could say that we haven't got the money and we might not be able to get it. I don't want to say that we would do it when we might not be able to do it. I can say that it has been the policy of the company to treat its patrons fairly in the City of Bluefield, and I am sure they will continue to do it.

Q. The same conditions that makes it difficult for you to say now whether you can obtain money to furnish the necessary additional water, affects each and every consumer to whom you furnish water, and makes it just as difficult for them to pay any additional increase, does it not?

A. No, I don't see that that should be so.

Q. Why not?

A. I will ask you why.

Q. You are the witness. Tell the Commission why the same conditions wouldn't affect the consumer as affects your company.

A. I have stated that I don't see why it should.

Q. Have you any reasons why it shouldn't?

A. I can state that maybe what you have reference to, that this shortage in water is going to increase insurance to the property owners of the City of Bluefield, so I am given to understand, by
1428 three-fourths. Now, I don't know what the insurance premiums are that are paid in the City of Bluefield, but I am informed by one of the biggest insurance agencies in Bluefield that there is approximately $120,000.00 in fire insurance premiums paid for a year. Of course one-fourth of that, and they claim that they are going to insert the three-fourths value clause in insurance policies unless water conditions improve, would make insurance policies cost the property owners one-fourth more. That would be equal to about $30,000.00 a year. Of course, that would be in addition to the burden they now pay, but that burden could be saved the City of Bluefield by an adequate supply of water in the event of fire.

Q. Take the little fellow, Mr. McCarthy, who works for $3.00 a day and who has a family of five or six children and a wife. Do not the same conditions that you speak about, which are due to the war, as you have stated, make it as impossible for him to stand an increase in the water rates as the same conditions would make it impossible for you to obtain the water,—to furnish the additional water?

A. No, I don't see that it would.

Q. Then you are willing to put your company in this
1429 attitude before the Commission, that you are asking for a return of eight per cent or more when you confess that you are not in a position to furnish the consumers of the City of Bluefield the necessary water at all times, are you?

A. I will confess that the conditions that now confront the citizens of the City of Bluefield have been, in a way, brought upon themselves by themselves. This question of an increase in rate was brought before the Commission three years ago and, had it been not resisted, as it was, by the City of Bluefield, and fought as it was by the City of Bluefield, this Commission perhaps would have gotten through with this case long ago and these questions might have been settled. As it is, they are still hanging fire, and the City of Bluefield and the Water Company are both suffering from it.

Q. Do you consider that an answer to my last question?

A. I beg your pardon. I will have the stenographer read the

question and I will answer it more fully, if that doesn't fully answer it.

(Thereupon the next preceeding question, "Then you are willing to put your company in this attitude," etc., and the answer thereto, "I will confess that the conditions," etc., were read by the reporter.)

A. (continued). I believe that is a pretty fair answer to it.

1430 Redirect examination.

By Judge Sanders:

Q. Mr. McCarthy, one question I omitted to ask you—the plant and property of the Bluefield Valley Water Works Company was not included in the inventory of the property of the Bluefield Water Works and Improvement Company when the value was fixed by the Commission at $360,000, was it?

A. No, it was not.

The witness is excused.

Thereupon HARRY M. KURTZ, a witness heretofore appearing and testifying on behalf of the petitioner, was recalled for further

Direct examination.

By Judge Sanders:

Q. Mr. Kurtz, the property of the Bluefield Valley Water Works Company, which you have given, was not included in the inventory of the property of the Bluefield Water Works and Improvement Company, the valuation of which was fixed by the Commission at $360,000.00, was it?

A. No, it was not.

1431 *Stipulation.*

It is agreed by counsel representing the respective parties hereto that the report of the applicant, Bluefield Water Works and Improvement Company, filed before the Commission on February 11, 1918, and entitled "Report of the Applicant Bluefield Water Works and Improvement Company," showing an accurate account of the receipts from its water business under the schedule of rates fixed by said Public Service Commission, as well as the expenses of operation from the 1st day of May, 1917, to the 31st day of December, 1917, inclusive, is herewith filed and made a part of the record of this case, but not being binding upon either of the parties hereto, but to be given such weight and credit as it may be entitled to.

Petitioner rests its case.

Thereupon, respondents not introducing any testimony in their behalf, the further hearing of evidence in this cause is closed and

the stenographer is directed to return a copy of the transcript of the testimony so herein adduced to the office of the Secretary of the Commission.

1432 STATE OF WEST VIRGINIA,
Public Service Commission, To wit:

I, R. O. Nuzum, an Official Reporter of The Public Service Commission of West Virginia, do certify that the foregoing is a true and accurate transcript, to the best of my skill and ability, of all of the evidence adduced in the cause of Bluefield Water Works and Improvement —, Application to change rates, before said Public Service Commission, at a hearing held in the offices of the Commission, in the Capitol Building, in the City of Charleston, State of West Virginia, on Thursday, the 4th day of April, 1918; and I further certify that each of said witnesses, before the taking of his respective testimony, was duly sworn; and that the attorneys and persons were present as in the caption hereto noted.

Given under my hand this the 9th day of April, A. D. 1918.

R. O. NUZUM,
Official Reporter.

1433 Case No. 59. Formal Complaint No. 58.

CITY OF BLUEFIELD

vs.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY

and

(Case No. 368.)

In re BLUEFIELD WATERS WORKS & IMPROVEMENT COMPANY.

Submitted April 24, 1918. Decided July 17, 1918.

By the COMMISSION:

These causes are again before the Commission for consideration upon the report of the Bluefield Water Works & Improvement Company, filed with the Commission on the first day of February, 1918, said report being filed pursuant to an order of the Commission entered in these causes on the 24th day of April, 1917, as follows:

"That the applicant, the Bluefield Water Works & Improvement Company, shall keep an accurate account of receipts from its water business under the foregoing schedule of rates, as well as the expenses of operation up to and including the 31st day of December, 1917, and shall immediately after the 1st day of January, 1918, furnish the same to the Commission. And these causes shall be re-

tained on the docket in order that the Commission may make such further order and take such further proceedings therein, especially in relation to the matter of fire protection, as it may deem proper."

Upon the filing of said report, as required by the order aforesaid, the Commission, at the request of counsel for the City of Bluefield, caused its Statistician to check up and verify the same, and on the 4th day of April, 1918, evidence of witnesses was heard in relation thereto.

1434 An examination of the report filed by the Water Company for the eight months, beginning with April 1st, 1917, and ending December 31st 1917, and covering the period for which the Water Company was required to report, shows that its gross revenues amounted to $35,531.72, and that its operating expenses, including taxes, amounted to $24,053.24, leaving a surplus for the eight months, as aforesaid, of $11,477.48, or upon the same ratio, a gross revenue for the entire year of $53,307.52, and a total operating expense, including taxes, of $36,079.80, which would leave a surplus for the entire twelve months' period of $17,227.72. This would only afford to the Water Company a return of 4.7 plus per cent. In operating expenses for said eight months' period, as shown by the report of the applicant company and the report of the Commission's statistician, there is included among other things, an item of $1,524.63, being two-thirds of $2,286.95, or one-fifth of the amount of the expense heretofore incurred by the applicant company in making inventory and appraisal of its property and presenting its case to this Commission upon this application; this item being included upon the theory that said expense is a proper operating charge and should be spread out and charged off over a period of five years. There is also included as an item of operating expense the sum of $4,957.05, being the cost of water purchased by the applicant company from the Bluefield Valley Water Works Company, at the rate of five cents per thousand gallons, and used by the applicant company to supplement its own water supply. If we include both of these items as a proper operating charge, as well as certain minor items, about the propriety of which there is some dispute, the applicant's operating expenses for the year, including taxes, would, as above stated, amount to about $36,000.00.

1435 However, we are of opinion that, if the item included as a part of operating expense as "Expense of Rate Case" is a proper charge, the same should be spread over a period of ten years instead of five years, thus reducing the annual charge for this purpose to the extent of one-half, plus accrued interest, and would reduce said item from $2,286.95 per year to about $1,150.00. The item of operating expense for water purchased from the Bluefield Valley Water Works Company, amounting to the sum of $4,957.05, is a proper operating charge, and seems fair, just and reasonable, if the cost of the investment of the Bluefield Valley Water Works Company is not included in or added to the capital investment of the applicant company.

The Bluefield Valley Water Works Company is a Virginia corporation, located in the State of Virginia, and has been constructed

and installed since our former decision in this case, at an expense of not to exceed, including proper allowance for overhead and going value, the sum of $25,000.00. It appears from the statistician's report that the rate of five cents per thousand gallons, now being charged by the Bluefield Valley Water Works Company and paid by the applicant company for water supplied, will produce sufficient gross revenue to pay the Bluefield Valley Water Works Company its operating expenses and a net return upon investment of nearly 14 per cent. Therefore, while the evidence discloses that the Bluefield Valley Water Works Company and the applicant company have a common ownership, inasmuch as the Bluefield Valley Water Works Company is a Virginia Corporation, and may be required, under the laws of Virginia, to furnish water to other communities or
1436 utilities, and since the price it is receiving for the water sold to the applicant company is producing an ample return upon the investment, it would seem proper to treat the Bluefield Valley Water Works Company as a separate entity and not to include the value of the investment therein as a part of the capital investment of the applicant company, and to allow the applicant company, as an operating charge, the expense of purchasing water from the Bluefield Valley Water Works Company at the rate now in effect.

After making the allowances and adjustments of operating expenses, as above indicated, it is apparent that the applicant company is entitled to a further increase in its revenues in order to enable it to earn a fair return upon the fair value of its property used in the public service. We have, therefore, determined that if rates are so fixed and adjusted as to enable the applicant to earn at least the sum of $10,000.00 additional gross revenue, its earnings will then be sufficient to produce a fair return upon the value of its property used in the public service, after making due allowance for proper operating expenses and taxes.

The Commission suggested in its original opinion herein that, under the rates then in effect and made effective by the order entered upon said opinion, the City of Bluefield was not paying to the applicant a fair proportion of its required revenue for the fire protection furnished said City; so, after it was determined that the applicant was entitled to earn $10,000.00 additional gross revenue in order to afford it a fair return upon its investment, the Commission arrived at the conclusion that this additional revenue should be paid by the City of Bluefield rather than by applicant's private
1437 consumers. The findings of the Commission in this respect were communicated to counsel for the applicant and the City authorities of the said City of Bluefield, with the suggestion that an agreement be made between the parties affected such as would provide for the payment of such additional revenue by the City, and at the same time make appropriate provision for the extension and improvement of the fire protection service furnished the City by said applicant. Following this communication an agreement was reached between the City authorities and the applicant company to the effect that said additional revenue would be paid to the applicant by the City, and, as further consideration therefor, the appli-

cant would extend its fire protection service so as to provide a water supply for approximately one hundred additional fire hydrants. A special election was held in the City of Bluefield for the purpose of authorizing a special levy to meet the payment of said additional revenue, whereat said levy for said purpose was approved and ratified by the voters of said City. Pursuant to said agreement, and the ratification thereof, the order herein will require said City of Bluefield to pay to the applicant, in addition to the rates now paid under the rates now in effect for water supplied for its municipal purposes, the further sum of $10,000.00, payable in quarterly installments, to constitute payment in full for all further extensions of water service to be made by the applicant company under the agreement hereinabove referred to, for fire protection and municipal purposes. The rates now in effect for service now furnished the said City by said applicant company will remain as fixed by the former order herein.

The applicant has made vigorous protest against the valuation fixed upon its property for rate making purposes, and insists
1438 that it is entitled to a higher valuation upon said property for said purposes. The Commission is of opinion that such complaint is not justified by the facts in this case. Without undertaking to decide whether the same measure of value should obtain for rate making purposes that is claimed by the utility for purposes of taxation, we deem it proper to observe in this connection that the records on file in the office of the Commission show that applicant's property used in its public utility business is now assessed by the Board of Public Works of this State, for the purposes of taxation, at a valuation of $200,000, and that the said property was reported by the Secretary and Treasurer of the said company, under oath, to said Board for purposes of taxation at a valuation of $141,183.91. It would, therefore, seem that, if the "true and actual value" of applicant's property for the purposes of taxation is $141,183.91, the valuation of $360,000.00 fixed for said property for rate making purposes, is, at least, fair and reasonable. It is shown that certain minor additions have been made to said property since the original hearing herein, but that the value thereof is more than overcome by the depreciation of said property since accrued. Furthermore, in the original opinion in this case, the various theories advanced and elements involved in the valuation of applicant's property were carefully and maturely considered and do not require repetition here. It may be pertinent to say, however, that for a number of years during the early history of the Water Company it was operated in connection with, and ancillary to, a real estate enterprise, and not, in a strict sense, as a public utility business; primarily for the purpose, evidently, of rendering its real estate more desirable and for the purpose of promoting its sale, and this was taken into consideration in arriving at the value of said property as a rate
1439 base. At the former hearing in these causes, after a thorough consideration of all of the evidence, the Commission was of the opinion that, under the circumstances in this particular case, in arriving at a fair valuation of applicant's property for rate making

purposes, great weight should be given to the actual investment cost of said property, and after making due allowance for what is termed "over head costs" and "going concern value," concluded that the fair and equitable value of applicant's property was $360,000.00. No evidence has been introduced since said hearing to justify the Commission in arriving at a different conclusion as to said value.

An order will be entered in conformity with the conclusions herein set forth.

1440 The Public Service Commission of West Virginia,

Capitol Building,

Charleston.

A meeting of The Public Service Commission of West Virginia, held on the 17th day of July, A. D. 1918.

* * * * * * *

Case No. 59. Formal Complaint.

CITY OF BLUEFIELD

vs.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY

and

Case No. 368.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY.

Application to Increase Rates.

These causes came on this day to be finally heard upon the report of the Bluefield Water Works & Improvement Company, made and filed pursuant to the order heretofore entered herein on the 24th day of April, 1917; the report of H. E. Nease, Statistician for the Commission, and all the evidence introduced and exhibits filed both on behalf of the said Bluefield Water Works & Improvement Company and the City of Bluefield, and was argued by counsel:

Upon consideration whereof, for the reasons set forth in the written opinion in these causes, which is hereby made a part of the record hereof, the Commission is of opinion to and doth find and order as follows:

(1) That the fair value of applicant's property used in the public service, excluding the value of the property owned by the Bluefield Valley Water Works Company, is the sum of $360,000.00.

(2) That the fair value of the property of the Bluefield Valley

Water Works Company, including allowance for overhead costs and going concern value, is the sum of $25,000.00.

(3) That the rates and charges for water furnished by the Bluefield Water Works & Improvement Company to its consumers
1441 shall continue and remain the same as fixed by the order entered herein on the 24th day of April, 1917.

(4) That the said City of Bluefield pay to the said Bluefield Water Works & Improvement Company, in addition to the rates and charges fixed for the service rendered and water furnished to said City, by the order of April 24, 1917, the further sum of $10,000.00 per annum, payable quarterly, effective from and after the first day of July, 1918, the said sum of $10,000.00 to be paid, as aforesaid, to cover and include the rental for approximately one hundred additional fire hydrants to be hereafter installed, as additional fire protection for said City, as well as further compensation for the water now furnished and service rendered said City of Bluefield by the Bluefield Water Works & Improvement Company.

A Copy.
Teste:

R. B. BERNHEIM,
Secretary.

1442 STATE OF WEST VIRGINIA:

Before the Public Service Commission.

Case No. 895.

Application of BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY for Authority to Change Rates, Tolls, and Charges for Water at Bluefield, in the County of Mercer.

Comes now the above named Bluefield Water Works & Improvement Company, the petitioner herein, and respectfully shows to the Commission as follows:

1. That it is a public service utility doing business under the laws of the State of West Virginia.

2. That its principal place of business is in Bluefield, W. Va., and that it is a public service utility, engaged in the management and operation of a water plant in said City of Bluefield, Mercer County, West Virginia, and that as such public service utility, it is subject to the provisions of chapter 15-0, of the Code of West Virginia, 1916, applicable to this class of public service utilities.

3. That at this time it has in effect the following schedule of rates, fares, tolls and charges:

Dwelling Houses, per Year, Occupied by one Family.

One year for one hydrant or spigot	$9.00
One bath tub	3.00
Shower bath, not connected with bath tub	3.00
Water closet, each bowl	3.00
Urinal	1.50
Set basin, each	1.50
One set of wash tubs, not exceeding three tubs	5.00
Each additional set of wash tubs	2.00
Each family having separate fixtures will be charged the same as if living in a separate house. If using the same fixtures, each additional family will be charged	9.00

1443 Boarding and Lodging Houses per Year.

For six rooms or less	$12.00
Each additional room without spigot	1.00
One room or hall with spigot and washstand	3.00
Each additional room with washstand and spigot	1.50
Water closet, each bowl	7.50
Urinal	3.00
Sink, slop over one	5.00

Hotels per Year.

Each room including those occupied by the proprietor, his family and employes	$1.00
Water closet, each bowl	7.50
Urinal	3.00
Set basin, each	3.00
Billiard saloon	10.00
Bowling alley	10.00
Bath tub	5.00
Laundry	15.00
Bakery	15.00
Bar room	25.00
Hose	10.00

Livery Stable per Year.

Fifteen stalls or less, each stall, not exceeding fifteen (15)	$2.00
Each stall exceeding 15 and not exceeding 25	1.00
Twenty-five to 40 stalls, each stall, exceeding 25 and not exceeding 40	.75
Over 40 stalls, each stall exceeding 40	.50
Hose for livery stable 15 stalls or less, each stable	10.00
Hose for livery stable 15 to 25 stalls, each stable	15.00
Hose for livery stable 25 to 40 stalls, each stable	20.00
Hose for livery stable over 40 stalls, each stable	25.00
Hacks, each	3.00
Hearse	3.00

Printing Offices per Year.

Printing office	$10.00

Restaurants and Eating Houses per Year.

Restaurant or eating house, without bar attached	$12.00
Restaurant or eating house, with bar attached	35.00

Stores per Year.

Stores where no liquors are sold	$9.00
Stores with license to sell spirit or malt liquors	25.00

1444 Building Purposes.

Laying brick per 1,000	$.15
Masonry, per cubic yard	.06
Water used in the construction of artificial or cement pavements, paid in advance, per sq. yd.	.05
Plastering, per 100 square yards	.30

Or on metered services at 25 cents per 1,000 gallons.

Sundries.

Post Office	$9.00
Banks	12.00
Butcher shop	25.00
Bar room	25.00
Barber shop	10.00
Billiard saloon	10.00
Bowling alley	10.00
Bakery	15.00
Buggy	1.50
Bath tub, public	5.00
Boiler with engine attached for each horse power	3.00
For each horse-power of boiler, above capacity of engine	1.00
Boiler when used without engine, each horse power	2.00
Horse, mule or cow, not belonging to livery stable	2.00
Laundry	15.00
Machine shop	15.00
Offices with spigot	5.00
Two or more offices using the same spigot, each	2.50
Photograph gallery	12.00
Theater or public hall	10.00
Work shop	9.00
Water closet, each bowl, public	7.50
Urinal	3.00
Water closet, private, each bowl	3.00
Wash basin or box not otherwise provided for	3.00
Soda fountain, six months	10.00
Tumbler washer	15.00
Tumbler washer, continuous, six months	30.00

Meter Rates.

All bills for water shall be computed each month, upon the following rates and basis: 30 cents per 1,000 gallons.

All water that passes through the meter will be charged for, whether the water is used or wasted.

A minimum charge per month will be made should the amount of water as registered by the meter and charged for as above not amount to that sum.

The minimum rate shall start from the date of the contract.

1445

Special Rates.

Any private consumer, desiring a lower rate can obtain same by signing contract at any one of the following rates:

25c. per 1,000 gallons.....	$6.75 monthly minimum rate.
20c. per 1,000 gallons.....	20.00 monthly minimum rate.
18c. per 1,000 gallons.....	54.00 monthly minimum rate.
16c. per 1,000 gallons.....	128.00 monthly minimum rate.

Sprinkler heads .06c. each.

Minimum rate, $100.00..... 6" pipe 2,000 sprinkler heads.

Minimum Charge.

For water supplied through a one-half inch meter, per month	$.75
For water supplied through a three-fourth inch meter, per month	4.75
For water supplied through a one-inch meter, per month..	6.00
For water supplied through a one and one-half inch meter, per month.....	15.00
For water supplied through a two-inch meter, per month...	35.00
For water supplied through a three-inch meter, per month..	85.00
For water supplied through a four-inch meter, per month..	210.00

Fire Protection.

Public fire hydrants $40.00 per year, payments to be made quarterly.

Private fire hydrants $40.00 per year, payments to be made quarterly.

3rd. That the applicant, the Bluefield Water Works & Improvement Company, shall keep an accurate account of receipts from its water business under the foregoing schedule of rates, as well as the expenses of operation, up to and including the 31st day of December, 1917, and shall immediately after the 1st day of January, 1918, furnish same to the Commission.

4th. These causes shall be retained on the docket in order that the Commission may make such further order and take such further proceedings therein, especially in relation to the matter of fire protection, as it may deem proper.

4. That it applies to The Public Service Commission for authority to change its rates for the reason that:

(*a*) That the rates as allowed by the Public Service Commission of West Virginia by order in case No. 59 Formal Complaint No. 58 and in case No. 368, which rates are as quoted above and went into effect on the first day of May, 1917, do not furnish an adequate and sufficient return to the petitioner.

1446 (*b*) The present rate of return does not give to the petitioner the eight per cent return upon the value of the plant which is uniformly allowed by this commission.

(*c*) Operating expenses and cost of material render the increased rate asked for imperative.

5. That application is hereby made for authority to change the rates of said applicant in the County of Mercer, in the State of West Virginia, and to put into effect the following changes in the schedule of rates as authorized by this commission:

Minimum charge per month $1.00.
Minimum amount of water to be charged for on domestic and other services to be 2,000 gallons per month.

The schedule of rates, fares, tolls and charges as ordered by the Public Service Commission above quoted remain in full effect, with the exception of the change in the said rates as asked for in this application.

6. There are no other public service utilities interested in this schedule or change of rates.

Wherefore, the said applicant prays that after due hearing and investigation The Public Service Commission may make an order granting the application herein and establishing the proposed rates and charges, or such rates, fares, tolls and charges as it may find to be equitable in the premises.

Dated at Bluefield this 6th day of June A. D., 1919.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY,
By WM. McCARTHY,
Superintendent.

STATE OF WEST VIRGINIA,
County of Mercer, To wit:

Wm. McCarthy, being first duly sworn says that he is superintendent of the Bluefield Water Works & Improvement Company,

petitioner named in the above petition, and that the facts and allegations therein contained are true, except so far as they are therein stated to be upon information and that so far as they are
1447 therein stated to be upon information he believes them to be true.

WM. McCARTHY.

Taken, sworn to and subscribed before me this — day of June A. D. 1919.

GEO. P. CROCKETT,
Notary Public in and for said County.

My commission expires on the 30 day of March 1920.

SANDERS & CROCKETT,
A. G. FOX,
Attorneys for Applicant.

1448 STATE OF WEST VIRGINIA:

Before the Public Service Commission.

Case No. 895.

Application of BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY for Authority to Change Rates, Tolls, and Charges for Water at Bluefield, in the County of Mercer.

The Demurrer and Motion to Quash the Above-styled Application and Answer of the City of Bluefield, a Municipal Corporation.

The City of Bluefield, a Municipal Corporation, demurs to the above styled application and moves to quash the same because the same is not sufficient in law, and not waiving its demurrer and motion to quash the said application, the said The City of Bluefield, for answer to the said application of the Bluefield Water Works & Improvement Company asking for permissinon to change the rates and charges now existing for water to said The City of Bluefield, the citizens and inhabitants thereof, and increase the said rates, says:

First. That the proposed rates as set up in Paragraph 5 of said application would be an excessive and exhorbitant charge upon The City of Bluefield, the citizens and inhabitants thereof, and in no way justified by the actual facts, and that the present rate for water charged by the complainant is, in many particulars, excessive and should be reduced; that this respondent is informed and believes, and therefore charges, that the present rates as fixed by this Commission heretofore in its decision, furnish an adequate return upon the money invested by the said applicant, which money is
1449 used and useful for the purpose of furnishing water to The City of Bluefield and its citizens and inhabitants; that it is

informed and believes, and therefore charges, that the said applicant has 2,600 taps within the corporate limits of The City of Bluefield; that upon 1,500 of said taps the increase asked for in Paragraph 5 of the applicant's application, would amount to 66⅔%; that upon the remaining 1,100 taps upon which the applicant collects water rents, the increase asked for in said Paragraph would amount to 25% over and above the present rates as fixed by this Commission in its former decision; that the service rendered by the said Bluefield Water Works & Improvement Company, the applicant herein, is insufficient and frequently the water is of muddy, impure, and bad quality.

And now this respondent, by way of further answer to said application, and setting up a claim to affirmative relief in this cause, says:

That the Bluefield Water Works & Improvement Company, the applicant, has violated the Acts and Laws of the State of West Virginia governing its business, in the following particulars:

1. That it is the duty of the said applicant company to furnish water to all of the inhabitants of The City of Bluefield who are willing to take and pay for same and it is the further duty of said applicant to maintain its supply mains and service pipes to the property lines of all of the inhabitants and citizens of the said City who are willing and able to take said water and pay for same; that in violation of its duty in this particular, the said applicant refuses to furnish water to the inhabitants of The City of Bluefield at North, or New Midway in the western portion of said City; that at the said North, or New Midway aforesaid, there are approximately
1450 fifty residences and other business houses; that there are approximately three hundred inhabitants in this locality; that all of said houses and inhabitants are situated upon a small area of ground and closely together, and this respondent avers that the said inhabitants are anxious, and have repeatedly requested that the applicant, the Bluefield Water Works & Improvement Company, extend its water main to their locality and furnish them water for domestic purposes and for fire protection; that the water main of the applicant is within 600 or 700 feet of this locality, and that it would cost comparatively little to extend the service to the locality of New Midway and furnish these inhabitants and citizens of The City of Bluefield with water for domestic purposes and for fire protection, and that said inhabitants in said locality of New Midway are able and are willing to pay the rates fixed by this Commission for said service.

2. That this respondent is informed and believes, and therefore charges, that over a considerable portion of Bluefield known as South Bluefield, which composes the principal residential section of The City of Bluefield, there is no provision made by the applicant company for furnishing water for fire protection; that a large number of the best residences in The City of Bluefield located in this section, to-wit, 100 residences, there is not sufficient water main or pipe laid or constructed by this applicant company for the purpose of fire

protection, and that in the event of fires in this section these homes would be completely destroyed for want of said fire protection; that the inhabitants and citizens of The City of Bluefield owning the said houses above referred to, are anxious for the said fire protection, and that this respondent is anxious, willing and able to bear the cost of the fire hydrants if the applicant company is re-
1451 quired, as under the law it should be, to extend its pipes and mains to said residences and homes for the purpose of furnishing the said fire protection.

3. Respondent further says that it is not only the duty of the applicant company, under the law, to supply water to all of the inhabitants of the said City, but that it is an expressed condition of applicant's franchise that it is to do so, and that the applicant is declining, failing and refusing to furnish the said water to the inhabitants and their homes and residences, in violation of the expressed condition of its franchise and the laws of the State of West Virginia.

4. Respondent further avers that the applicant company has in its office in the City of Bluefield, complete maps showing by sections, the particular streets in said South Bluefield where the main or water pipes are insufficient for fire protection, and this respondent here demands that the said applicant company produce before Your Honorable Commission, its said maps, or copies thereof, for the purpose of inspection by your Commission and as evidence in this cause.

Respondent, therefore, prays that the applicant company be required to produce said maps or copies thereof, at such time and place before this Commission, as it may fix, and that an expert from the office of this Commission be directed to make a physical examination of the said locality in South Bluefield and the said locality known as New Midway, and report to this Commission the feasibility and approximate cost of furnishing the said additional fire protection and water for domestic purposes to said localities, and that after due investigation, and hearing an order may be made commanding said applicant company to furnish the said service above referred to, and comply with its duty under its franchise and the laws of the State of West Virginia, and in any other particu-
1452 lar which may seem proper to this Commission, and for such other and further orders as the said Commission may deem necessary, reasonable and just in the premises.

In witness whereof, the said The City of Bluefield has caused this demurrer, motion to quash, and answer to be signed in its name, by C. O. Stahlman, its Mayor, and its official seal to be thereto attached, this 17th day of July, 1919.

THE CITY OF BLUEFIELD,
By C. O. STAHLMAN,
Mayor.

1453 STATE OF WEST VIRGINIA:

Before the Public Service Commission.

Case No. 895.

Application of Bluefield Water Works & Improvement Company for Authority to Change Rates, Tolls, and Charges for Water in the City of Bluefield and County of Mercer.

The Replication of the Bluefield Water Works & Improvement Company, Petitioner, to the Demurrer and Motion to Quash and Answer of the City of Bluefield, a Municipal Corporation.

The Bluefield Water Works & Improvement Company, saving and reserving unto itself all and all manner of avantage of exception and objection to the manifold insufficiencies of the said demurrer, motion to quash and answer of the said City of Bluefield, for replication thereunto, says that the said answer of the City of Bluefield is uncertain, untrue and insufficient, and now this applicant, by way of special reply to the answer of the City of Bluefield, filed in this cause, wherein the said defendant prays for affirmative relief against this plaintiff, says:

1. That it denies that the proposed rates as set up in paragraph five of the application of the Bluefield Water Works & Improvement Company would be an excessive and exorbitant charge upon the City of Bluefield and the citizens and inhabitants thereof, and in no way justified by the actual facts, and says that the rates as asked for in paragraph five of the petition and amended petition of the Bluefield Water Works & Improvement Company would be, if allowed by this Commission, reasonable, just, equitable and in conformity with the former decisions of this Commission rendered in hearings upon petitions filed by the Water Works & Improvement Company;
1454 and this respondent denies that the present rate for water charged by the complainant is in many particulars excessive and should be reduced, and says further that the present rates for water charged by the complainant are not sufficient or adequate nor do they produce a just or fair return upon the value of the property of this respondent: and this respondent also denies that the present rates as fixed by this Commission heretofore in its decision furnish an adequate return upon the money invested by the said applicant, which money is used and useful for the purpose of furnishing water to the City of Bluefield and its citizens and inhabitants, and in answer thereto says that the present schedule of rates, tolls and charges as fixed by this Commission, and now used by your respondent, do not produce a fair, adequate and reasonable return upon the money invested in the property of your respondent which is used and useful for the purpose of furnishing water to the City of Bluefield; that the value of the said property as fixed by your Commission is $360,000.00; that a just return upon the said value of $360,000.00 would

be a net profit of $28,800.00 per year; that the present schedule of rates, tolls and charges for the year 1918, and the first six months of the year 1919 produced an income of $26,072.42, whereas a just return upon the said property for the said period of eighteen months would have been $43,200.00. And this respondent denies that the water furnished the said City of Bluefield is muddy, impure and of bad quality, but, on the other hand, it says that the water furnished the said City of Bluefield is pure, clear and of excellent quality, and that the purity and quality of the said water is shown in reports of the State Board of Health filed periodically before The Public Service Commission of West Virginia.

2. This respondent further denies that it is the duty of the Bluefield Water Works & Improvement Company to furnish water to all the inhabitants of the city who are willing to take and pay for the same, and says that it is advised and so avers and charges that
1455 an additional burden on the rate payers as a whole should not be imposed for the benefit of a particular portion of the community unless a reasonable necessity for it exists. Your respondent admits that it is true that the inhabitants of New Midway, in the western portion of the said City of Bluefield, are not furnished with water by your applicant, but this respondent denies that a water main sufficient to supply the said locality of New Midway is within 600 or 700 feet of the said locality, and in this behalf says that it is true that a main measuring an inch and one quarter is within 600 or 700 feet of the said locality, but this said main is taxed to its utmost capacity by the consumers now being furnished with water for domestic purposes therefrom, and that the said main does not carry, nor can it carry, sufficient water to supply the said locality of New Midway; that in order to supply the locality of New Midway it would be necessary for this respondent to lay a main measuring from three to six inches a long distance, to-wit, over one mile, and that the expense of laying the said main at this time would not be justified by the return realized from the service furnished thereby.

3. This respondent denies that over a considerable portion of Bluefield, known as South Bluefield there is no provision made by the applicant company for furnishing water for fire protection. Your respondent admits that on some streets in the locality known as South Bluefield there are no mains suitable for furnishing fire protection, but this respondent says that in many sections of South Bluefield there are now, and have been for a long time, mains sufficient and suitable for furnishing fire protection to the inhabitants of those localities, and that this respondent is now and has been ready to install and set up fire hydrants for the protection of those localities but that the City of Bluefield has not requested that these hydrants be so set up, nor has it expressed its willingness to pay for the installation of such hydrants as will be necessary to protect the inhabitants of those streets which are now provided with mains
1456 sufficient for the installation of fire protection. And this respondent further says that some of the streets in South Bluefield are not at the present time graded or in such a condition that it

will be possible for this respondent to lay mains for the protection of the residences located thereon. And this respondent further says that on those streets whereon it is possible at this time to lay mains for the protection from fire of the residences located thereon the expense of laying and installing the said mains would be great and would not at this time be justified by the circumstances.

4. This respondent further says that the answer of the said City of Bluefield to the application for a raise in rates filed by your respondent is indefinite and insufficient; that South Bluefield is a large area embracing many streets and avenues; that the answer of the City of Bluefield does not set out or designate those avenues upon which it desires that your respondent install water mains of sufficient size to carry water for fire protection, and your respondent demands that the said City of Bluefield particularly set out, designate, name and describe those streets and avenues on which it desires the respondent to lay and install water mains for fire protection, and that the City of Bluefield name and describe each point or place in the City of Bluefield where it desires this respondent to install and set up fire hydrants.

5. And your respondent further says that it is now, and has at all times in the past, been ready and anxious to install and place such equipment as may be necessary for the full and sufficient protection of the inhabitants of the said City of Bluefield from fire and provide all the residents thereof with water for domestic use, but that the City of Bluefield has not been, nor is it now, ready to pay your respondent an adequate and sufficient return upon the investment necessary to make such new and additional installations; that your respondent has not in the past, nor is it now receiving an adequate return
1157 upon the money now invested in this plant; that the additional protection as required by the City of Bluefield will involve the expenditure of a large amount of capital, to-wit, from $50,000.00 to $100,000.00, and that your respondent has not now, nor can it raise by bond or otherwise, an amount sufficient to make the said installation, unless the said city will insure to your respondent a just and adequate return, not only upon the capital now invested but upon such other and further investment as it will be necessary for it to make.

6. And your respondent for further answer says that it is advised and therefore charges and avers that in case The Public Service Commission orders that additional expenditures for further equipment and water mains be made by this respondent that it will be entitled to a return of eight per cent. upon the investment so made. And this respondent is further advised and so avers and charges that it will be entitled to have the cost of said additional equipment added to the valuation hitherto placed upon the said plant by The Public Service Commission for rate making purposes. And it is further advised that it is entitled to have this addition to the value of the plant set and fixed by this Commission as a permanent value upon which at all future times this respondent will be entitled to a just and adequate return.

6. This respondent, for further answer, says that the making of extensive additions to the plant and equipment of the Water Works Company is not justifiable at the present time; that the cost of labor and material is exceedingly high and that it is not expedient to invest large sums of money in improvements of this nature under the present circumstances; that in case these further additions are ordered by The Public Service Commission they will at all times in the future of necessity be and remain a permanent charge against the City of Bluefield and the inhabitants thereof.

1458 The Bluefield Water Works & Improvement Company therefore prays that the said City of Bluefield be required to particularly and definitely designate the particular streets and avenues upon which it desires mains for fire protection to be placed by your respondent, and that it designate those points where it desires your respondent to place fire hydrants. And your respondent further prays that the application for an increase of rates as filed before your Commission be considered separately and apart from the answer filed by the City of Bluefield therein, and that an order be issued from your Commission allowing to your respondent the increase in rates therein applied for.

And your respondent denies each and every allegation contained in the demurrer and motion to quash and answer of the said City of Bluefield, which is not expressly admitted to be true.

And now having fully and specifically replied to the said City of Bluefield's claim for affirmative relief as made in said answer your respondent prays hence to be dismissed as to so much of said answer as sets up any claim for affirmative relief against the Bluefield Water Works & Improvement Company, and humbly prays that the relief as has been prayed for in its original and amended bill be granted by your Commission.

In witness whereof the Bluefield Water Works & Improvement Company has caused this replication and answer to be signed in its name by Wm. McCarthy, its Superintendent, this 22nd day of July, 1919.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY,
By WM. McCARTHY, *Superintendent.*

SANDERS & CROCKETT,
A. G. FOX,
Attorneys for Bluefield Water Works & Improvement Company.

1459 STATE OF WEST VIRGINIA:

Before the Public Service Commission.

Case No 895.

The Amended Application of Bluefield Water Works & Improvement Company for Authority to Change Rates, Tolls, and Charges for Water at Bluefield, in the County of Mercer.

Comes now the above named Bluefield Water Works & Improvement Company, the petitioner herein, and files this its amended petition before your Honorable Commission, and respectfully shows to the commission as follows:

1. That it is a public service utility doing business under the laws of the State of West Virginia.

2. That its principal place of business is in Bluefield, West Virginia, and that it is a public service utility engaged in the management and operation of a water plant in the said City of Bluefield, County of Mercer, and State of West Virginia, and that as such public service utility it is subject to the provisions of Chapter 15-0 of the Code of West Virginia, 1916, applicable to this class of public service utilities.

3. That at this time it has in effect the schedule of rates, fares, tolls and charges as is set out at length in paragraph 3 of the original petition filed by the Bluefield Water Works & Improvement Company in this case.

4. That it applies to the Public Service Commission for authority to change its rates for the reason that:

(*a*) That the rates as allowed by The Public Service Commission of West Virginia by order in case No. 59 Formal Complaint No. 58 and in case No. 368, which rates are as set out in the original petition filed herein and went into effect the first day of May, 1917, do not furnish an adequate and sufficient return to your petitioner.

1460 (*b*) That the value of the plant for rate making purposes of your petitioner as set by The Public Service Commission in case No. 58 Formal Complaint No. 59 is $360,000.00, and that the rate of return allowed by the Commission upon this value was eight per cent net profit, and that the present rates have not produced a return of eight per cent.

(*c*) That the evidence produced before your Commission in support of the original petition shows a net income for the year 1918 of $15,379.47, and that the net income for the first six months of the year 1919 is $9,693.95; that under the return as allowed by the Commission the net profits for the year 1918 should have been $28,800.00 and for the first six months of 1919 $14,400.00.

(*d*) That the Bluefield Water Works & Improvement Company at the present time is not making a fair, sufficient or adequate profit upon the operation of its plant.

5. That application is hereby made for authority to change the rates of the said applicant in the City of Bluefield, County of Mercer, State of West Virginia, and to put into effect the following changes in the schedule of rates as authorized by this Commission:

Minimum charge per month, $1.00.
Minimum amount of water to be charged for on domestic and other services to be 2,000 gallons per month.

Meter Rates.

All bills for water shall be computed each month, upon the following rates and basis: 40 cents per 1,000 gallons.

The schedule of rates, fares, tolls and charges as ordered by The Public Service Commission quoted in the original application in this case to remain in full effect, with the exception of the change in the said rates as asked for in this application.

6. That there are no other public service utilities interested in this schedule or change of rates.

1461 Wherefore, the said applicant prays that the evidence heretofore taken in support of the original application filed in this case be read and considered as if taken in support of this amended application, and this applicant further prays that after due hearing and investigation The Public Service Commission may make an order granting the application herein set out and establishing the tolls, rates and charges or such rates, fares, tolls and charges as it may find to be equitable in the premises.

Dated at Bluefield this 24 day of July A. D., 1919.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY,
By WM. McCARTHY,
Superintendent.

STATE OF WEST VIRGINIA,
County of Mercer, To wit:

Wm. McCarthy, being first duly sworn says that he is superintendent of the Bluefield Water Works & Improvement Company, petitioner named in the above petition, and that the facts and allegations therein contained are true, except so far as they are therein stated to be upon information and that so far as they are therein stated to be upon information he believes them to be true.

WM. McCARTHY.

Taken, sworn to and subscribed before me this 24 day of July A. D., 1919.

WILLIAM E. ROSS,
Notary Public in and for said County.

My commission expires on the 17 day of December, 1919.

SANDERS & CROCKETT,
A. G. FOX,
Attorneys for Applicant.

1462 The Public Service Commission of West Virginia, Charleston.

Case No. 895.

BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY.

Application to Change Water Rates.

Transcript of Testimony Adduced Before the Public Service Commission of West Virginia at a Hearing Beginning on the 9th Day of July, A. D. 1919, *and Continued from Time to Time and Finally Completed on the — Day of ——, A. D.* 1919.

Appearances:

The Applicant, Bluefield Water Works and Improvement Company, by A. G. Fox, of Sanders & Crockett.
The Protestant, City of Bluefield, by John R. Dillard, City Solicitor.

Stanard & Nuzum, Reporters.

1463 Mr. Dillard: If your honors please, before we go further in this case I want to call attention briefly to the history of this case. You recall there was an application brought on behalf of the City of Bluefield a number of years ago to require the water company to do certain things stated in that application. The Bluefield Water Works & Improvement Company filed a counter or cross petition asking for an increase in rates. That matter was heard and on the hearing of that case your Commission granted the water works a five per cent increase on the thousand gallons or the minimum; it was 25 cents prior to that time, and raised it to 30 cents and reduced the minimum quantity of water from 3,000 to 2,500 gallons. Then the matter was taken to the Supreme Court of Appeals and dismissed on the grounds the order made by this Commission was an interlocutory order, and then it was that the City of Bluefield and the water works company came to an understanding under which the Commission found they were entitled to have a net additional income of $10,000 and left the water works company and the City of Bluefield to fix that amount, either on the consumer or on the hydrants and let the

taxpayers pay it. We did that and fixed it on the hydrants.
1464 Following that we called a bond election, which was carried, and voted $10,000 and provided for the increase of $10,000 at that time in order to keep it off of the consumer. Now, they are asking you to increase it on the consumer again, increase the amount from 75 cents to $1.00 minimum and make the minimum not 2,500 gallons but 2,000 gallons.

I want, gentlemen, at the proper time in this case, and I state here that it's necessary to get this information from the water company before I can file a cross application or petition, asking that the water works company give us the mains in South Bluefield, which constitutes approximately 12,000 inhabitants of the city, and extend their mains in the western portion of the City to a locality which has 1,000 inhabitants, and I want now for the Commission to require of Mr. McCarthy, Superintendent, to furnish us a map or profile showing their mains and the capacity of their pipe. I am informed that in South Bluefield, with the exception of one or two streets, that it's impossible to put a water plug in that section, for the reason the mains are too small to carry the requisite amount of water, and in the western portion of the City,—New Midway it is called,—there *is* no mains at all, and I want now to demand
1465 of Mr. McCarthy, Superintendent, a map or profile showing their outlay and the situation, in order that we can intelligently prepare this cross petition or application.

Chairman Wiles: Have you such a map with you, Mr. McCarthy?

Mr. McCarthy: The office here has one,—the one that was filed in the former case.

Q. Has there been any change in that since the former hearing?
A. No sir.

Mr. Fox: If the Commission please, on behalf of the Water Company I want to file our certificate of publication as required by the order.

As the Commission knows, this case has been before the Commission before in Case 58, formal complaint 59, and upon the hearing in that case the Commission decided and so stated that the Water Company were entitled to a net income on their investment of about 8 per cent, and they fixed the value of the property of the water company at $360,000; in other words, stated that we were entitled to a net income on our investment of about $28,000—that is a net income, net return to the company. I feel all that is necessary for us to do at this hearing is to show the gross income for the year 1918 and operating expenses for the year 1918, and if we have
1466 fallen below the 8 per cent net income allowed us, we are entitled to a raise of rates. It will be impossible to show that entirely for the year 1919, because we do not have all that; we do not know what the taxes will be and I will simply show it for the year 1918.

This increase we have asked for is an increase of from 75 cents to $1.00 as a minimum meter rate, and to reduce the minimum

amount of water allowed from 2,500 to 2,000 gallons. About from 73 to 75 per cent are meter consumers, and this raise in rate will affect approximately 50 percent of our consumers. If there is any other statement the Commission desires before I put Mr. Kurtz on the stand I will be glad to give it to them, if I can.

Thereupon came HARRY M. KURTZ, a witness of lawful age, introduced on behalf of applicant, who, being first duly sworn, testified as follows:

Direct examination.

By Mr. Fox:

Mr. Fox: I wish to make one more statement. I stated this increase will affect the meter consumers. It will also affect the flat rate consumers.

1467 Q. What is your residence?

A. Philadelphia, Pennsylvania.

Q. What is your position?

A. Secretary and Treasurer of the Bluefield Water Works and Improvement Company.

Q. As Secretary & Treasurer what are your duties?

A. Well, I have charge of all the detail work of the company, keeping the books and records.

Q. And it is part of your duty to be familiar with the books of the company?

A. It is.

Q. Have you prepared a statement showing the gross income, operating expenses, depreciation and net income of the Bluefield Water Works & Improvement Company for the year 1918?

A. I have.

Q. Was that statement taken from the books of the company?

A. It is.

Q. Will you please produce that statement?

A. I present a statement of the receipts and expenditures from January 1st to December 31st, 1918; also profit and loss statement covering the same period.

(Said statement is filed as Kurtz Exhibit No. 1.)

1468 Q. I notice you have charged $3,685.36 as depreciation on this statement. About what per cent of the value of the property as found by the Public Service Commission is this amount?

A. About one per cent.

Q. About one per cent?

A. Yes sir.

Q. This statement shows a net income of $18,879.47, and it shows also the expenses of the Philadelphia office amounting to $5,200.00. The Commission has held that the Water Works & Improvement Company is entitled to only $1,500.00 for the expenses of the

Philadelphia office; allowing only $1,500.00 for that expense and deducting 2 per cent for depreciation, how is your statement affected?

A. Well, off-hand, I think it would be about $3,600.00 less than the eighteen thousand and some odd dollars.

Q. Please state for the benefit of the Commission what your statement shows to be the gross income for the year 1918?

A. $58,196.39.

Q. What are your operating expenses for the year 1918, allowing only $1,500.00 for the Philadelphia office?

A. Operating expenses would be $35,616.92.

1469 Q. Giving a net income of how much?

A. $22,579.47 without the depreciation.

Q. How much would the depreciation amount to at 2 per cent?

A. $7,200.00 on the valuation of $360,000.00.

Q. Deducting depreciation from the amount stated as net income, what is the net income of the property?

A. $15,379.47.

Mr. Dillard: If you will permit me later on to cross-examine Mr. Kurtz I can do it more satisfactorily to the City and myself, because I have never had any notice of what this accountant shows. If the Commission please, if you permit us to file this cross application and petition, I would like to have these cases consolidated and hear them both at the same time.

Chairman Wiles: I think you can file your answer and ask for affirmative relief in that.

Mr. Fox: If the Commission please, I wrote at the time of filing this application for increase of rates offering to produce the books of the company, or to furnish any such statement the Commission would require. The Commission by Mr. Bernheim, Secretary, replied that unless so requested by the protestants there would be no examination of the books required. Had the City of Bluefield wanted to examine these books, we would have been glad to produce

1470 the books before this time. There was no request on its part that they be produced. In regard to this matter of applying for affirmative relief by the City in regard to the extension of our lines, I can not see how that is going to effect the question of this rate. They are separate and distinct matters. If the City is entitled to have them extended there will be no controversy on the part of the water company to allowing them to be extended. I do not see how that application of theirs can effect the application of ours, or why they should be consolidated.

Mr. Dillard: If these gentlemen are not doing what the law requires them to do; if they are not furnishing the service to the City, they ought not to be paid anything; they can't come here and ask of your hands additional compensation, if they are not giving the service they ought to give, and I think it is proper to hear them together, and in as much as the City had no information of the offer by Mr. Fox to have the books examined, I had no notice of it, and this is the first time I have had any notice of it. It is only fair to the inhabitants of Bluefield, which consists of about 20,000 people

up there, and if these people are not giving the service the- should they ought not to be compensated.

1471 Commissioner Morgan:

Q. This pipe line, Mr. Kurtz, for which a charge of $3,607.07 is made, does that consist of repairs on old pipe or is that additions?
A. It is maintenance and repairs to the pipe in the ground.
Q. How about this Ada pump, $543.35?
A. That is expense of operation and repairs to the pump.
Q. Is that a usual and customary annual charge for repairs for that pump, $543.35?
A. Not to that extent. I believe during that year we had a break down there.
Q. Here is another item of $908.48 for meters. Is that repairs or putting in new meters?
A. No, that is expense of repairing meters and tending meters: it is in addition to meters and no new meters. That is the expense of installing meters, expense of putting them in, but not the expense of the meter itself.
Q. You have the labor $585.65 and the other item, M. & S. $322.83?
A. That is materials and supplies, yes sir.
Q. And another item of auto. truck $420.07?
A. Yes sir, that is the expense of running the truck and repairing, the gasoline, oil and necessary repairs.

Thereupon adjournment was taken to the 19th day of July, A. D. 1919.

1472 Charleston, West Virginia,
Saturday, July 19, 1919.

Pursuant to the adjournment last hereinbefore noted, the further hearing of evidence in this case is resumed.
Present: Same parties.
Reporter: R. O. Nuzum.

Mr. Dillard: Your Honor, I tender this Answer,—Demurrer, Motion to Quash and Answer.

Thereupon HARRY M. KURTZ, a witness heretofore appearing and testifying on behalf of the applicant, was recalled for

Further direct examination.

By Mr. Fox:

Q. You are the same Mr. Kurtz who testified formerly in this case?
A. Yes sir, I am.
Q. I have here a statement marked "Bluefield Water Works and Improvement Company—Revenue and Expense 1-1 to 6-30-1919", under the head of "Revenue", containing several items, the gross

amount of $32,142.67, and showing an itemized statem nt of expense. I hand you this statement and ask if it is a correct
1473 copy of the Revenue and Expenses, as is shown on the books of the Bluefield Water Works and Improvement Company, and if it is correct to the best of your knowledge and belief, and if so I will ask you to file it as a part of your evidence?

A. The statement is a correct statement of the receipts and expenses, January 1 to June 30, 1919, as reported from the Bluefield office, which statement I file herewith.

(The said statement is here filed as a part of the testimony of this witness, for identification, marked "Exhibit Kurtz No. 1".)

Cross-examination:

By Mr. Dillard:

Q. Mr. Kurtz, in your statement filed on a former day of this hearing, which purported to be a statement of the revenue and expenses of the Bluefield Water Works and Improvement Company, the applicant in this case, the first item I notice is Water Rents, $57,461.46. What does that item include?

A. It includes all of the accrued water rents for the year 1918; that is, the rents for which bills were rendered.

1474 Q. Does that include the fire hydrant rentals of the City of Bluefield?

A. Yes sir.

Q. What amount of that item is for the fire hydrants in the City of Bluefield?

A. I don't have that analyzed here, Mr. Dillard. I will have to get it out of the books to analyze it for you. (Witness consults records.) $10,000.00 was the fire hydrant rental for the year 1918 for the City of Bluefield.

Q. Was that amount collected under an order of this Commission?

A. I believe it was.

Q. When did that order take effect, if you know?

A. The first day of July, 1918.

Q. Then, you didn't collect the full $10,000.00 under that order for the year 1918, did you?

A. We collected $10,000.00 for the year 1918.

Q. How much did you collect for the year 1917 for fire hydrants?

A. $4,433.33.

Q. Then, if you collected all of the $10,000.00 which was allowed you by the Commission, in addition, for the year 1918, you should have collected $14,000, fourteen thousand and some odd dollars for the year 1918, should you not?

A. If I understand that order correctly, the $10,000.00 is in addition, yes.

1475 Q. Then, if you should have collected the $4,000 and some odd dollars, in addition to the $10,000.00 which the Commission allowed you for the year 1918, your books are not correct, are they?

A. Well, I don't know whether that $10,000.00 is an additional sum for fire hydrants only. We collect other rents from the City which I haven't included in that amount.

Q. What was the total you collected from the City of Bluefield outside of the private taps for the year 1918?

A. From the City of Bluefield—$233.97.

Q. Now, don't you know, Mr. Kurtz, that you have only collected and charged $5,000.00 of the $10,000.00 for the year 1918, of the $10,000.00 allowed you in addition to what you had collected, under the order of this Commission?

A. The $10,000.00 additional would accrue from July 1, 1918.

Q. Don't you know, as a matter of fact, that you have only collected $5,000.00 of that, and only $5,000.00 of that is a proper credit on the 1918 statement?

A. That is correct. We have only collected $5,000.00 in 1918, in addition to the regular rental charged previously.

Q. In your statement previously referred to you have "Salaries—Philadelphia", $4,800.00; "Rent—Philadelphia", $400.00, making $5,200.00. Do you know, as a matter of fact, that the Com-

1476 mission held in the former case that your Philadelphia expenses should only amount to $1,500.00, do you not?

A. That is correct.

Q. Deduct $1,500.00 from $5,200.00 leaves $4,700.00, does it not?

A. $3,700.00.

Q. The $3,700.00 erroneously charged to the Philadelphia office, added to the $5,000.00 which you are entitled to under the ruling of this Commission from the fire hydrants or from the City of Bluefield, in addition, makes how much?

A. $8,700.00.

Q. Sir?

A. $3,700 and $5,000.00?

Q. Yes, sir.

A. $8,700.00.

Q. Add that to your $18,879.47 and see how much money you made in 1918?

A. That makes a total of $27,579.47.

Q. Then your statement, as taken from the books of your company showing a net earning of $18,879.47 is erroneous, is it not?

A. It is correct, according to the books.

Q. Well, taking the books in connection with the ruling of this commission heretofore in this case, it is correct?

A. I am not competent to decide on that. From the way

1477 I read this order of the Commission, it is that the increase only took effect from July 1st.

Q. Well, you only collected $5,000.00 for the year 1918?

A. Yes, sir.

Q. And you are entitled to $5,000.00 more for that year?

A. I wouldn't know. I couldn't tell from reading this order.

Q. Well, assuming that that is correct, then your books and your statement made from the books, showing a net earning of $18,879.47 is erroneous, isn't it?

A. Assuming that, that is correct.

Q. And, instead of that, what amount did you earn, as stated there a moment ago?

A. From your figures, $27,579.47.

Q. Eight per cent of $360,000.00 would be $28,800.00, would it not, Mr. Kurtz?

A. Yes, sir. May I ask a question here on this statement?

Q. You mean that you want to ask me a question?

A. Yes, sir.

Q. Go ahead.

A. There is no depreciation charged on that statement. This is simply a statement of revenue and expense. It wasn't a profit and loss statement.

Q. What statement is that?

A. This one we are talking about now, 1918.

Q. Didn't you, in your summary of that statement, charge for depreciation $3,658.36?

1478 A. No.

Q. Isn't this a copy of the statement?

A. No, sir, that isn't. That is the profit and loss account.

Q. Didn't you file that with the Commission at the same time that you filed the other statement?

A. I don't know what I filed. This is the statement that I was working on.

(Counsel for the respondents here states that this copy was mailed him by the Secretary of the Public Service Commission a day or two after the hearing on a former day in this case, and he took it to be a copy of the statement filed.)

Q. This is the statement which you filed with the Commission when you testified here on the 9th day of July, is it not?

A. That is a copy of it, yes, sir.

Q. And haven't you got on that statement your profit and loss account attached to it?

A. Profit and loss account, yes, sir.

Q. Isn't that the identical statement you filed?

A. Yes, sir.

Q. And haven't you got on that statement your profit and loss account attached to it?

A. Yes, sir, but on that statement, you see, this $3,000.00 is not on here,—that $3,600.00; take that $3,600.00 off of here.

Q. Why would you have to take that $3,600.00 off of the net profits you showed on your revenue and expense accounts?

1479 A. That is gross profits.

Q. As a matter of fact, this is not an itemized account at all, is it?

A. Yes, sir, of revenue and expense.

Q. All right, sir. If you say it is an itemized account, I will ask you about an item, service pipes, $103.89, maintenance and supply, $231.83, labor $335.72. Can you give me what that is composed of without referring to your book?

A. No, sir.

Q. Then it is not an itemized statement of your account, is it?

A. It is an itemized statement of the totals of the accounts.

Q. I notice an item, Mr. Kurtz, purification of water, $387.64. Why was it—$387.64, labor $8.75, making a total of $396.39. Why was it necessary to purify your water? Wasn't it pure before,—good water?

A. Well, that purification should be sterilization. Sterilization would be a better term for that.

Q. Then your account is not correct in that particular, is it?

A. It is correct in that that is the account as we have it. It is simply a matter of stating what the meaning is,—sterilization or purification.

Q. Well, if you had to sterilize it, there was something wrong with it, wasn't there?

A. I think that is caused by the law of the State, whether it is pure or not.

1480 Q. You think the law requires that to be done, whether the water is pure or not?

A. I am not capable of properly answering that question, Mr. Dillard. I only get these accounts from the Bluefield office, and we put them in the books as reported.

Q. And you don't know whether any of this service was rendered, or any of the items were correct?

A. I couldn't certify to it. I only certify to them as the proper amounts paid out by the company.

Q. And in your profit and loss account, I notice that you have an item "Material, Supplies and Wages," $25,415.88. Are you able to tell, without reference to the books, what that is composed of and whether or not it is correct?

A. I can't tell you the items. I can simply certify as to that total amount being correct, according to the books, for which the company has expended that sum of money.

Q. When you filed this account, showing the net earning of $18,879.47, why didn't you deduct from that amount the depreciation charges of $3,658.36, if you say that that should be deducted?

A. Well, when I filed that statement, I didn't make up that statement with the intention of filing it here, because at the time I didn't know what the Commission was going to require, and I simply had that along with me; although I filed the profit and loss

1481 statement, which does show the charge for depreciation. The revenue and expense statement was gotten up for another purpose.

Q. How long has your company been preparing to file this application before this Commission?

A. Well, do you refer to the beginning of the previous case?

Q. No.—The present case.

A. I don't get your question, quite.

Q. How long have you been preparing for this case?

A. I would say two or three months.

Q. And you came here, at the instance of your attorneys, with this

account for the purpose of filing it before this Commission, didn't you?

A. No. I didn't have that statement for the purpose of filing it, because I couldn't know what was going to be required; rather thought that what they might ask for I would have to prepare and send later on, as was done in the previous rate case.

Q. You didn't think that this statement was sufficient to be filed, did you?

A. I wouldn't say that, because I had no intention of filing it when I brought it down with me.

Q. Another item, Mr. Kurtz, in your profit and loss account, General Expense and Miscellaneous, $4,498.70. Do you know what that is composed of, without reference to your books?

A. No, I couldn't tell you off-hand, without going over the accounts.

1482 Q. Does that amount include an item, "Investigation New Water Supply," $733.77?

A. No, sir.

Q. How do you know?

A. Because that account is now in the books for the present as an investment account, and not as an expense account.

Q. Why do you carry it on your book as an investment account?

A. Because we are not certain at this time whether to charge it to expense or to carry it, until further investigation of the water supply is settled.

Q. I hand you a statement which was furnished me by the Bluefield Water Company, City of Bluefield, since the hearing on a previous day, entitled "Balance Sheet, December 31, 1918," and ask if that item of $733.77 isn't charged as an asset?

A. Yes, sir.

Q. Then, that item boosts the value of your plant to that extent, does it not?

A. At the present time, yes.

Q. And you don't know whether you ever will obtain any water under the investigation that the company has made for which it charged this amount of $733.77, do you?

A. I am not competent to answer the question.

Q. Until you do get some results from that investigation which has been beneficial to the company, don't you think it is previous to charge this, either as an asset or as a liability on your

1483 books?

(Counsel for petitioner objects to that question, for the reason that we are not claiming an increase of rate on any figures that may have been added to the valuation that has been placed on the property at the last hearing, which was $360,000. We are claiming our right to an increase on the value fixed by the Commission and not on additions made since that time.)

Chairman Wiles: The witness may give his opinion, although the addition of that much capital would be entirely negligible on the question of rates.

A. No.

Q. Why?

A. We have expended the money, and we must charge it on the books.

Q. Whether you ever get any results beneficial to the public or not?

A. Yes, sir.

Q. You have an item, Auto Truck, $420.07. Was that for a new truck or repairing an old truck?

A. That was for maintaining an old truck,—I will say our only truck; the expense of running it and what necessary repairs were required on it.

Q. And in your statement for the last six months, to June 30, you have the same item, Auto Truck, $89.68. Is that for
1481 the same purpose?

A. Yes, sir.

Q. Don't you know, Mr. Kurtz, that that truck has been practically out of commission and hasn't been used by the Bluefield Water Works and Improvement Company for some time?

A. I do not.

Q. In 1918 your statement shows that you paid $461.10 United States Income Tax. In the six months of 1919, up to June 30th, your statement shows that you paid $1,637.49 Income Tax. Explain the difference?

A. Well, one reason is that the income for the year 1918 was larger than the year 1917, and also that the rate of tax was very much larger; I think it was double; I am not sure now; it was very much larger.

Q. How do you arrive at the depreciation charged in your account, 1918, for $3,658.36?

A. Well, that was the depreciation on certain items of our water works account, such as machinery and auto truck and some other items which I can't off-hand tell you just now, as I do not have that statement with me.

Q. This item of Increase Rate Case 20 per cent,—that is one-fifth of the total amount that the Commission in the former case allowed you to charge each year, is it not?

A. Yes, sir.

1485 Q. In your account for the last six months of the present year, where you charge 2 per cent depreciation on a valuation of $360,000.00, one-half $3,600.00. Why did you charge the depreciation in your supplemental account for the last six months on $360,000.00, and didn't charge the depreciation in your account for 1918 upon the same basis or sum?

A. As this sum from January 1st to June 30th, 1919, estimates certain items, the depreciation is not actually on the books and will not be until the end of the year, but, in making this statement, we had to estimate for the items for the year.

Q. And you only lacked $58.36 of charging as much depreciation for six months on your estimated depreciation as you had in actual depreciation for the whole year of 1918, is that correct?

A. Yes sir.

Q. In your statement for the last six months of water rents, $31,588.75, please state what proportion of that amount was paid by the City of Bluefield, as a municipality?

A. Now, Mr. Dillard, all of that amount has not been paid yet; that, of course, is actual from the books; we haven't cash from all of it.

Q. What does it include? What proportion to the City of Bluefield is included?

A. $7,648.25.

1486 Q. Is any of that amount composed of any portion of the $10,000.00 that the Commission allowed your company, in addition to the rentals you were collecting before they rendered the last decision in this case?

A. I can't tell you, Mr. Dillard, the analysis of that amount as it is reported to me from Bluefield in total for each quarter.

Q. What is twice $31,588.75?

A. $63,177.50.

Q. According to your statement for the first six months of 1919, the present year, your company will make more money in the year 1919 than they did in the year 1918 by several thousand dollars, will it not?

A. Provided the next six months of expenses are not larger than the first six months, and that the next six months of receipts will equal the first six months' receipts.

Q. How many taps have you in the City of Bluefield,—I mean by that, private taps?

A. About 2,700, I believe.

Q. How many of those run over the minimum allowance of 2,500 gallons?

A. I am unable to answer that, Mr. Dillard.

Q. Assuming that 1,600 of those taps run over the minimum of 2,500 gallons, if the Commission would grant you the increase you ask for, what would be the percentage of increase on those 1,600 taps?

A. I can't answer that question.

1487 Q. Your company is not asking for any salaries or office expense at the Philadelphia office in excess of the $1,500.00 heretofore allowed by this Commission, is it?

A. No.

Redirect examination.

By Mr. Fox:

Q. Mr. Kurtz, what are your duties as bookkeeper of the Bluefield Water Work and Improvement Company?

A. Secretary and Treasurer. I have charge of the books of accounts, run all the disbursements, all the accounts that are furnished by the Bluefield office.

Q. Your account filed formerly at the first hearing in this case included the item of $5,200.00 for expenses of the Philadelphia

office. I will ask you if you were asked at the time you filed this statement to change your account, allowing only the amount allowed by the Commission for that expense?

A. I will not.

Q. I will ask you if, at that time, I did not ask you to deduct $1,500.00 from the $5,200.00 and make a statement as to the total?

1488 A. You did, but I understood you to mean for the six months' statement, which I was to furnish, because this statement had already been filed with the Commission, and I didn't understand that I was to furnish a corrected statement.

Q. You misunderstood me. I asked you if I did not, in the examination in regard to that account, make that change?

A. I don't recollect it, if you did.

Q. For what purpose was the statement filed by you in your first examination made?

A. Well, at the end of each year, we always make up such a statement, whether it is for any particular purpose outside of having it on file in the office or not, but when this statement was made, it was sent, a copy was sent to Mr. McCarthy, to be shown, I believe, to the Rotary Club.

Q. On that statement was it necessary to show all the money expended by your company for all purposes, whether or not that amount was an amount proper to bring before this Commission in an increase in rates application?

A. It was.

Q. Was it necessary to show on that account, to show what became of the money, the $5,200.00 shown for the salaries of the Philadelphia office, for the purpose of your bookkeeping?

A. Yes sir.

1489 Q. On your own bookkeeping, what percentage do you charge depreciation?

A. There is no stipulated lump sum percentage, but certain items are charged different amounts, ranging from 2 per cent to 5 per cent.

Q. What amount was allowed by this Commission to be charged as depreciation?

A. Two per cent on the valuation of $360,000.00.

Q. The amount charged on your first account is practically one per cent, is it not?

A. Yes sir, practically.

Q. At what date, if you remember, did the increase in rate from the City of Bluefield, for fire service, go into effect?

A. July 1st, 1918.

Q. What period does your first account cover?

A. January 1st, to December 31st, 1918.

Q. Then, what per cent of the increase allowed by the Commission was collectible during the year 1918?

A. I should say 50 per cent.

Q. Or $5,000.00?

A. Yes sir.

Q. Then, the $5,000.00 additional which Mr. Dillard asked you to add to your account was not earned during the year 1918. Is that correct?

A. That is correct.

Q. Your statement shows a net income of $18,879.47; to that should be added $3,700.00 overcharge for the Philadelphia office. Please give the total of that amount.

1490 A. $22,579.47.

Q. Your statement of Revenue and Expenses does not show depreciation. Will you figure depreciation on the $360,000.00 valuation allowed by the Commission and subtract it from the total just given?

A. $15,379.47.

Q. I will ask you to state if the amount that you have just stated is a true statement of the net return of the Bluefield Water Works and Improvement Cmpany for the year 1918?

A. It is.

Q. In your supplemental statement filed for the year 1919, you have shown "Salaries for Philadelphia Office", $750.00, being half of $1,500.00, and you have shown depreciation figured at 2 per cent on the valuation. I will ask you why those figures are shown in that manner on your supplemental account and why they are not now carried in that manner on your first account?

A. By advice of counsel, I was instructed to make the statement in that manner.

Q. And your first statement, when figured under the same rules as your last statement, would amount to the $15,000.00 net return which you have testified is the correct net return for the year 1918. Is that correct?

A. Yes sir. When you began this question, you said: In the supplemental statement for the year 1919. That is for the half of the year.

The witness is excused.

1491 Thereupon came WILLIAM MCCARTHY, a witness of lawful age, who, being first duly sworn, testified as follows:

Direct examination.

By Mr. Fox:

Q. Mr. McCarthy, are you the General Manager of the Bluefield Water Works and Improvement Company, located at Bluefield?

A. I am superintendent of the company.

Q. What are your duties as superintendent, generally?

A. I have full charge of the operation, maintenance, repair part of the work, connected with the company, supervision over the accounts of the company, generally; in fact, all of the business connected with the company I have charge of at Bluefield.

Q. You have seen the accounts filed by Mr. Kurtz in this case?

A. Yes sir.

Q. I will ask you if, from your general knowledge of the business and books of the company, if those accounts are correct?

A. I have no reason to doubt a single item of those accounts. I furnished Mr. Kurtz with the expense items that go to make up those accounts. They are paid through me and through the mail by checks from the Philadelphia office, and I have every reason to believe that they are correct.

Q. Is the figure as stated by Mr. Kurtz, $15,379.47 as the net income of the Blue field Water Works and Improvement
1492 Company for the year 1918 correct?

A. I can't say, I am sure. I feel this way about these figures. Mr. Kurtz has given us here a statement of the accounts as they appear on his books, but when it comes to getting right into detail in regard to what makes up those acounts, I figure that is more a question for an auditor than it is for a person on the witness stand, especially after things are a year old. We have offered our books here to be audited. They weren't required. This is the best thing we have. I believe every word on it and every figure on it to be correct, but I can't state positively one way or the other about the totals or the details that go to make up those books.

Q. The Commission has stated in the first hearing in this case that a return was to be in some measure determined by service. I will ask you what is the quality of the water that is being furnished by the Bluefield Water Works and Improvement Company to its consumers?

A. I consider that we furnish an excellent quality of water to our consumers at Bluefield, taking into account the nature and source, which is really the only source of water for a supply to the City of Bluefield.

Q. How does the water supply of the City of Bluefield compare to the other cities of the State?

1493 A. Judging from reports made us, received through the Public Health Department, State Board of Health, we believe that we furnish the purest water of any city of its size in the State.

Q. When was the last of these reports made?

A. Well, they have been made periodically once a month, but a year or more ago we were advised by the State Department of Health that the condition of the water at Bluefield, judging from reports that they had made and investigations which they had carried on in the past were such that it wasn't necessary to make them out once a month, but once in three months would be often enough. The last report we had, I believe, was in May.

(Counsel for respondents object to all questions and except to the answers of the witness insofar as they refer to reports and what has been advised by the Health Department, for the reason that same is hearsay and improper.)

Q. To whom are these reports sent?

A. The reports are sent, according to the law, to the Public Serv-

ice Commission and to the utility, one copy being kept by the State Board.

Q. What was the nature of the last report furnished?

A. They are all of the same nature; all very good reports. We had one where,—about a year ago, I believe we had one report in which we were told that no other city in the State of the
1494 size of Bluefield got a clean bill of health but ourselves, and we did get a clean bill. Of seventeen examinations made by the State Board of Health, not one of them were bad.

Q. An item on the account filed for the first six months of the year 1919 was $263.26 for sterilization of water. I will ask you what was embraced in that account and why that acount was charged?

A. That account is made up mostly of items covering the cost of chlorine gas, liquid chlorine gas, used in the sterilization of water, and in the repairs of apparatus that distributes the gas uniformly through the water as it is passed into the mains.

Q. Has there been any demand upon the Water Company, upon the part of the City to furnish water to parts of the city which are not now supplied with domestic water?

A. I don't recall any formal demand. We had, several years ago, when in a former trial of this case,—I will call it this case because I believe all of these cases are really one case,—we had a few city officials who wanted hydrants put in in front of their houses.

Q. I said domestic?

A. No, I don't recall any demand for domestic use of water, because everybody within hearing, almost, is furnished with domestic water.

1495 Q. Are there any parts of the city that are not furnished with domestic water?

A. Yes sir. There are several little communities; one of them on the Bramwell Road; one is new Midway; and another little section known as Alifftown; and I presume there are a few isolated instances where cottages are,—properties are so high in the mountains as to be out of range of our water; a few; not very many.

Q. Has there been any demand or request on the part of the inhabitants of either New Midway or Alifftown for water for domestic service?

A. Yes sir. I have had requests from both places. New Midway, the people are too far to reach very well with our present system, and those in Alifftown could be reached very easily, but they have no map of their property, and I have been trying to secure a map of the territory before giving them any water service. They have been trying too to provide a map, but it seems they haven't been able to do so up to this time. However, I guess it has been a year or so since any one at Alifftown or even Midway has said anything to me about water.

Q. What is the closest connection or main of the Water Company to New Midway?

A. Well, I would say New Midway is abut a mile away from

our mains; from our cast iron mains. We have water within
1496 a thousand feet, perhaps, of New Midway, but it is very small pipe; only put in for domestic uses to Midway and residents along Bluefield Avenue.

Q. Will that small main you have there bear any more service?

A. Don't believe it would.

Q. What would be the cost of laying a main large enough to take care of New Midway, the other houses along that line, and fire protection for that section?

(Objected to. Overruled.)

A. About $15,000.00.

Q. How many houses in New Midway could be served by domestic service?

A. I will have to figure that up. There are 45 buildings in New Midway, including a church and a store, but I have no idea just how many of them would want water. I know there is a few of them don't want water. The greater portion of them, however, I am sure would take water if it was delivered to them.

Q. Do you believe that an extension of the mains of the company to New Midway would be justified at this time?

A. Well, there is two ways of looking at that question. Personally from my own viewpoint, I don't really believe that the benefits to accrue to people living in that neighborhood would justify the expense. However, I don't believe that is a question for the
1497 Water Company to decide, really. I really have believed that a water company should put in water at any point, if the patrons of the City of Bluefield feel disposed to pay for it; that is, to pay an amount that will justify the Water Company to make these extensions. In other words, pay the interest and the depreciation on the investment.

Q. Has the City of Bluefield utilized all the mains that are now at their disposal, for fire protection?

A. No sir, they have not.

Q. In what sections of the City are there mains not connected with hydrants, which make fire protection for the property within those limits impracticable?

A. Well, I don't know that there is any place that would make it impracticable, but the location of the mains and the great distance between many of the hydrants don't give the City the protection that the Water Company affords. In other words, the City of Bluefield is not taking advantage of all the protection that is afforded by the mains of the Water Company now and that have already been laid, in all places and in many places.

Q. Is the water company now ready to connect hydrants with the mains already laid, which would protect those places which do now now have protection?

1498 A. They are now ready and have always been ready to do that kind of work; never have refused; never have hesitated to put in hydrants wherever they were demanded by the City.

Cross-examination.

By Mr. Dillard:

Q. Don't you know, Mr. McCarthy, that the City of Bluefield has ordered, on a number of occasions in the past fire hydrants to be installed in various sections of South Bluefield, and that your company has wilfully and persistently refused to install those hydrants?

A. I know, as I stated in an earlier trial of this case, we had a number of instances where hydrants were ordered put in in front of properties owned by officials of the City of Bluefield, but I don't recall having ever refused to put in a hydrant or even at any point where we had mains that would furnish water for fire protection.

Q. Then you deny that, as a matter of record the Recorder's Office of the City of Bluefield will not show that your company has been ordered on numerous occasions to place fire hydrants at
1499 numerous places, which has been ignored by your company, in the last two or three years?

A. I will state positively that we have never refused to put in a hydrant in a single place in the City of Bluefield where we have mains for that purpose.

Q. What size main does it take to put a hydrant on for fire protection to the ordinary dwelling house?

A. Well, it ought to be 6 inch. We have a good many mains in Bluefield that are not serving thickly populated sections or sections that have been built up a long time, where the mains are three or four inch, but a real effective line for fire service ought to be about six inch.

Q. Have you got a six inch main on Fulton Street?

A. Where?

Q. Fulton Street, in the City of Bluefield, South Bluefield?

A. I don't know. We have no fire mains on Fulton Street.

Q. What is the size of your main on Fulton Street?

A. It is very small; it is a domestic main.

Q. Couldn't you attach a fire hydrant to it for the purpose of fighting fire?

A. No sir.

Q. How many residences are on Fulton Street?

A. Eight at the present time.

Q. Don't you know that there are twelve or fifteen at the present time?

1500 A. There might be.

Q. Have you got a main on Albemarle Street?

A. We have mains on nearly every street in the City of Bluefield that has houses erected on it; but in many instances; particularly in South Bluefield, a section that has only recently sprung up, and could be as dry as the Sahara Desert if we hadn't taken account of the wants of the people and met those wants by affording and extending the mains, as best we could, for domestic purposes, with the idea of developing that section and later being in position to get in cast iron mains large enough for city fire protection.

Q. That last statement which you made was gratuitous and purely voluntary, wasn't it—about the Sahara Desert?

A. It is dry, Judge; you know it, too.

Q. Have you any mains on Wyoming Street from which you could put a fire hydrant?

A. Yes sir.

Q. What sized main?

A. Four inch.

Q. But you think a six inch is the proper size to afford proper fire protection?

A. Six inch would be better; more effective; but Wyoming Street comes into the same class I mentioned a while ago.

1501 Q. What sized water mains do you have on Washington Street, Mr. McCarthy?

A. We have a main crossing Washington Street, and no fire plug on it either. It has been there for twenty years; twenty-five years possible.

Q. Where does it cross Washington Street?

A. At the intersection of Olive and Bay.

Q. How close is that to Jefferson Street?

A. About 300 feet; 400 feet, possibly.

Q. That is at the North end of Washington Street, isn't it, Mr. McCarthy?

A. Bay Street; no. Bay Street is rather about one-third of the way up Washington Street, only.

Q. Well, how many houses; how many streets in South Bluefield are there that have, as you say, recently sprung up, in the last two or three years, that you haven't got mains upon which you could put fire plugs on?

A. A great many.

Q. Then, it is true that a great many houses in South Bluefield, the principal residence section of the City of Bluefield, is entirely without fire protection. Is not that so?

A. I don't think that could be said to be the principal residence section of Bluefield.

Q. Don't you know that there are more people living out there than any other place in Bluefield?

A. I don't think so, no.

1502 Q. And better houses than any other place in the City of Bluefield?

A. No, I wouldn't think that that was true; good houses, some of them.

Q. Of course, this little map that the Commission furnished me is of practically no value to show the information——

A. That is just as good as this. It shows every main we have on there.

Q. Does that show the size of the main on Fulton Street? It doesn't show any on Fulton Street.

A. Yes, it does. Fulton is on there as a small main. We have mains, but they are small.

Q. It says 2½ inch or under. It may be one inch, half inch, or whatever is necessary for domestic purposes.

A. I think that is intended to show a one and one-half inch main.

Q. Your figure here shows smallest main 2½ inch and under.

A. But on the street itself, the size of the main is on those, shown in figures, but so small it is difficult to see.

Q. Then, the answer is apparently approximately true as to the want of fire protection in South Bluefield, isn't it?

A. No, I don't think so. I don't think you have asked me anything about fire protection.

1503 Q. Didn't I show you that you couldn't have fire plugs on Fulton Street?

A. Yes sir.

Q. And you said that a number of other streets there, that you had no main upon which you could put a fire plug?

A. Yes sir; but you started out with the question that we refused to put in fire hydrants where the City had ordered them. I said that we hadn't refused wherever we have the mains.

Q. And I say that your company ought to have a main wherever it is necessary to protect the property.

A. And I will add to that and say that we should, but I say that we should have a return on it, too; and I have so stated that to the Mayor of Bluefield on two different occasions. He has come to me and asked me what would be our attitude if they, as a City, would come to this Commission and ask for this service, and I asked him what would be their attitude, as a City, if we should come to the Commission and ask for a return on the amount of capital necessary to put in the necessary mains and fireplugs in Bluefield and for the retaining reservoir which we must build in the near future, and I told him that, if they would do that, we would certainly put them in.

Q. Mr. McCarthy, you have recently, for the last six months or longer, been devoting a good deal of your time to the sale of

1504 this plant of the Bluefield Water Works and Improvement Company to the City of Bluefield, and possibly other parties, haven't you?

A. Well, I have devoted a few minutes occasionally to the City of Bluefield, and scarcely any time to anybody else. I have offered it to the City, and I have been asked a good many questions about it. First, I would meet the Mayor,—never have had any satisfactory, particularly satisfactory reply. The matter is now being investigated by the Rotary Club in Bluefield, and they have not made a report. The City is not in a position to give us a reply one way or the other until they get that report from the Rotary Club.

Q. You offered this plant to the City of Bluefield for the sum of $500,000.00, didn't you?

A. Yes sir.

Q. And you stated to the officials of the City of Bluefield that you would show by the books of your company, if they would purchase this plant, that it would pay for itself in twenty years, didn't you?

A. I think that I said 27 years, Judge.

Q. Will you deny that you said, on repeated occasions, that it would pay for itself in 20 years?

A. I think 27 years was the way I figured it. But you understand that there are many items of expense connected with the operation of the plant by the Water Company that would not be against
1505 the plant if it was operated by the City,—Texas is one of them, for instance.

Q. What other?

A. Well, I don't recall now just what others there would be.

Q. There wouldn't be any other, would there, with the exception of taxes?

A. Well, I believe there is, too, a few small items that the Water Company has to pay that would not have to be paid by the City.

Q. Then, if you made the statement that the plant would pay for itself in 20 years, at the price of $500,000.00, either that statement is incorrect, or the statement that you are not getting 8 per cent on $360,000.00 is incorrect, isn't it?

A. Well, Judge's question now is a little hard on me. He has shortened up on me both ways. He has shortened up on me on the time, to begin with, and the rate question also came in. If the City owns its own plant, it can make their own rates. It isn't a matter or question of coming before the Commission. If they find the charge is too small, they can make the rates themselves. I had it all figured out.

Q. Isn't it true that you are making this application, principally as a play to force the City of Bluefield to buy this plant from you, rather than to be continually annoyed every once in a while
1506 by an application before this Commission to defend a rate case?

A. I would say, in reply to that question, that we could hardly be blamed for offering a plant for sale; trying our best to get rid of it; that would inventory today at perhaps $900,000.00 for $500,000.00; but so far as being annoyed making these applications for rate increases, I am becoming accustomed to them now, and am not at all annoyed about it, and I suppose that they are going to come on with greater frequence in the future than in the past.

The witness is excused.

Mr. Fox: May it please the Commission, since we have received this last report as to the returns for the year 1919, we desire to amend our petition for an increase in rates, but in connection with that motion to be permitted to amend our application, we would like to have the further supplemental agreement that the evidence already taken in support of the petition as it now stands be read and considered in support of the amended petition, as we will not ask
1507 that it be amended, adding to the increase already asked for.

We know that it will be necessary to follow out the rules of the Commission in regard to the advertisement and notice, and so we will ask for a continuance until some future date for the final decision of this case, until we can get out our notices to the individual consumers, and publish our notice in the papers in the county,

giving the notice required by law, and at the end of that time, we will have to come to an agreement with the City as to the final hearings or decision on the case.

The further hearing of evidence in this case is adjourned and continued to a future date, to be later determined and agreed upon between the parties, or to be fixed by the Commission.

1508 Bluefield Water Works and Improvement Company.

Balance Sheet, December 31, 1918.

Cash	$7,084.97	
Capital Stock	.....	$312,000.00
Water Works	309,923.87	
Storage Lot #2, Sec. #22	3,500.00	
War Savings Stamps	840.00	
U. S. Government Bonds, 4th Liberty Loan	5,000.00	
U. S. Government 4½% Ctfs. of Indebtedness	10,000.00	
Auto Truck	750.00	
Atlas	2,359.40	
Surveying Instruments	277.05	
Laboratory Outfit	502.38	
Tools	1,859.97	
Meters on Hand	546.30	
Office Furniture & Fixtures	1,344.55	
Material & Supplies	2,441.90	
Insurance 1919-21	162.91	
J. R. Neal	38.79	
Profit and Loss	.....	48,986.35
Increase Rate Case	7,128.00	
Investigation New Water Supply	733.77	
Sundry Deposits	.....	631.79
Accrued Turning on Fees	33.75	
Accrued Water Rents	8,756.92	
City of Bluefield	3,813.39	
Accrued Interest	24.19	
Sundry Individuals	141.20	
A. L. Rhoads, Cashier	145.80	
Wm. McCarthy, Supt.	50.00	
Bluefield Valley Water Works Co.	.....	4,879.34
Triangle Coal Co.	.....	25.00
State Compensation Commissioner	3.67	
Arnold, Hoffman & Co., Inc.	35.00	
Pay Rolls	.....	851.07
Superintendent's Vouchers Payable	.....	124.23
	$367,497.78	$367,497.78

Revenue & Expense.

1-1 to 12-31-18.

Receipts:

Water Rents			$57,461.46	
Turning on Fees			193.50	
Interest			479.93	
Rent Bailey Farm			60.00	
Meter Tests			1.50	
				$58,196.39

Expenditures:	M. & S.	Labor.	
Pipe Line	121.90	3,485.77	3,607.07
Ada Pump	366.70	176.65	543.35
Beaver Pond	10.95	.....	10.95
Service Pipes	103.89	231.83	335.72
Springs	31.33	199.25	230.58
Office Building	99.98	.....	99.98
Meters	322.83	585.65	908.48
Auto Truck	420.07	.....	420.07
Meter Inspection & Sealing	16.18	441.64	457.82
Purification of Water	387.64	8.75	396.39
Reading Meters	.....	441.65	441.65
Inspection of Pipe Lines	.....	441.71	441.71
Engineer & Fireman	.....	2,276.37	2,276.37
Coal, Freight &c. Ada	2,124.14	.....	2,124.14
Water Purchased	7,688.19	.....	7,688.19

Salaries, Bluefield	.....	5,433.41	5,433.41	
Salaries, Philadelphia	.....	.....	4,800.00	
Rent, Philadelphia	.....	.....	400.00	
Traveling Expense	.....	.....	44.00	
Workmen's Compensation Fund	.....	.....	18.95	
Rental through N. & W. Tracks	.....	.....	10.00	
Legal Expense	.....	.....	300.35	
Insurance	.....	.....	208.07	
Laboratory Expense	.....	.....	4.74	
Plumbers' Bonds	.....	.....	20.00	
Office Expense, Bluefield	921.11	.....	938.53	
Philadelphia	17.42	.....		
Taxes Pipe Line, W. Va.	.....	3,445.00		
Taxes, License City of Bluefield (2 years)	.....	21.00		
Taxes, License, Pub. Ser. Comm.	.....	36.00		
Taxes, Capital Stock, W. Va.	.....	240.00		
Taxes, Capital Stock, U. S.	.....	241.75		
Taxes, Income U. S.	.....	461.10		
Taxes, Special Excise, W. Va.	.....	53.85		
			4,498.70	
Increase Rate Case (20%)			2,657.70	$39,316.92
				$18,879.47

1510 Bluefield Water Works & Improvement Company.

Profit and Loss Account, December 31, 1918.

Credit Balance December 31, 1917		$43,142.52
Gross Earnings:		
Water Rents	$57,461.46	
Interest	479.93	
Turning on Fees	193.50	
Rent Bailey Farm	60.00	
Meter Tests	1.50	
Accounts Payable	33.34	
		58,229.73
		$101,372.25
Operating, Maintenance & Repairs:		
Material, Supplies & Wages	$25,415.88	
General Expense & Miscellaneous	6,744.64	
Taxes	4,498.70	
Accounts Receivable	50.62	
Increase Rate Case (20%)	2,657.70	
		39,367.54
		$62,004.71
Depreciation		3,658.36
		$58,346.35
Dividend 3% on $312,000		9,360.00
Credit Balance 12-31-1918		$48,986.35

1511 Accrued Water Bills, 1-1-18—12-31-18.

Date.	Meter a/c.	Flat rate.	Fire prot.	Turning on fees.	Meter a/c., city of Bfd.	City of Bfd. hydrant a/c.	Meter test.
1-31-18	25.04	1,224.65	175.00	19.50	.....	.....	..
2-28-18	774.48	18.60	.....	37.75	.....	.....	..
3-31-18	894.99	5.48	.....	4.75	.05	1,250.00	..
4-30-18	8,907.55	1,223.15	181.67	31.00	41.63	.....	.50
5-31-18	780.92	6.55	.....	35.75	.....	.....	..
6-30-18	722.41	6.74	.....	8.25	.....	1,250.00	..
7-31-18	8,851.53	1,251.67	175.00	11.25	68.93	.....	..
8-31-18	800.41	11.93	.....	37.25	7.16	.....	..
9-30-18	861.70	.43	.....	7.25	.....	3,750.00	..
10-31-18	8,836.76	1,282.67	175.00	13.50	52.81	.....	..
11-30-18	759.44	132.25	.....	21.25	.....	.....	..
12-30-18	9,414.33	1.88	.....	3.50	63.39	3,750.00	..
	41,629.56	5,166.00	706.67	231.00	233.97	10,000.00	.50

Recapitulation.

Meter	41,629.56		
Flat Rate	5,166.00		
		46,795.56	
Less Adjustments		134.00	
			46,661.56
T. on Fees	231.00		
Less Adjustments	37.50		
			193.50
Fire Protection			706.67
City of Bfd. Meter A/c			235.97
City of Bfd. Hydrant A/c			10,000.00
Meter Test			.50
			57,796.20

Revenue & Expense, 1-1 to 6-30-1919.

Revenue:				
Water Rents, $31,594.57 less $5.82 refunds			$31,588.75	
Turning on Fees			76.00	
Interest			447.92	
Rent Bailey Farm			30.00	
				32,142.67
Expense:	**M. & S.**	**Labor.**		
Pipe Line	1,036.15	1,576.35	2,612.50	
Ada Pump	504.20	50.00	554.20	
Service Pipes	89.74	163.50	253.24	
Springs	58.16	110.50	168.66	
Meters	176.19	228.50	404.69	
Auto Truck	89.68	.....	89.68	
Meter Inspection & Sealing	.....	250.06	250.06	
Sterilization of Water	263.26	.....	263.26	
Coal, Freight, &c. Ada	1,890.96	.....	1,890.96	
Water Purchased	.....	.....	1,935.91	
Reading Meters	.....	268.56	268.56	
Inspection of Pipe Line	.....	249.88	249.88	
Engineer & Firemen	.....	1,533.03	1,533.03	
Salaries Bluefield			3,043.65	
Workmen's Compensation Fund			12.11	
Rent through N. & W. Tracks			5.00	
Insurance 1919 $237.06, ½			118.53	

Revenue & Expense, 1-1 to 6-30-1919.—*Continued.*

	M. & S.	Labor.		
Laboratory Expense			28.45	
Office Expense Bluefield			353.92	
Plumber's Bonds			10.00	
Taxes:				
Pipe Line, W. Va.	$3,500.00	estimated		
License City of Bluefield	10.00			
License Public Service	36.00	"		
Capital Stock, W. Va.	240.00			
Capital Stock U. S.	347.00			
Income U. S.	1,637.49			
Special Excise, W. Va.	117.64			
	$5,888.13½		2,944.06	
Philadelphia Expense Allowance	$1,500.½		750.00	
Increase Rate Case expense ½ of	$2,657.70		1,108.37	
				18,848.72
				$13,293.95
Depreciation 2% on valuation of	$360,000½			3,600.00
				$9,693.95

BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY.

Application to Change Water Rates.

Report of H. E. Nease, Statistician.

Filed September 22, 1919.

This report is made in connection with the Amended Application of the Bluefield Water Works and Improvement Company to change its rate, tolls and charges, in Case No. 895 now pending before the Commission.

The following statement showing Revenue and Expenses for the year ended December 31, 1918, was filed on behalf of the Company as "Kurtz Exhibit No. 1":

Revenue and Expenses.

Receipts:		
Water Rents	$57,461.46	
Turning on Fees	193.50	
Interest	479.93	
Rent Bailey Farm	60.00	
Meter Tests	1.50	
		$58,196.39

Revenue and Expenses.—Continued.

Expenditures:

	M. & S.	Labor.	
Pipe Line	$121.90	$3,485.17	$3,607.07
Ada Pump	366.70	176.65	543.35
Beaver Pond	10.95	.....	10.95
Service Pipes	103.89	231.83	335.72
Springs	31.33	199.25	230.58
Office Building	99.98	.....	99.98
Meters	322.83	585.65	908.48
Auto Truck	420.07	.....	420.07
Meter Inspection & Sealing	16.18	441.64	457.82
Purification of Water	387.64	8.75	396.39
Reading Meters	.....	441.65	441.65
Inspection of Pipe Lines	.....	441.71	441.71
Engineer and Firemen	.....	2,276.37	2,276.37
Coal, Freight, &c., Ada	2,124.14	.....	2,124.14
Water Purchased	7,688.19	.....	7,688.19
Salaries—Bluefield	.....	5,433.41	5,433.41
Salaries—Philadelphia			4,800.00
Rent, Philadelphia			400.00
Traveling Expense			44.00
Workmen's Compensation Fund			18.95
Rental through N. & W. Tracks			10.00
Legal Expense			300.35
Insurance			208.07
Laboratory Expense			4.74
Plumbers' Bonds			20.00

Plumbers' Bonds			
Office Expense—Bluefield	921.11		
Philadelphia	17.42		
		938.53	
Taxes, Pipe Line, W. Va.	3,445.00		
Taxes, License City of Bluefield (2 years)	21.00		
Taxes, License Pub. Ser. Com.	36.00		
Taxes, Capital Stock, W. Va.	240.00		
Taxes, Capital Stock, U. S.	241.75		
Taxes, Income, U. S.	461.10		
Taxes, Special Excise, W. Va.	53.85		
		4,498.70	
Increase Rate Case (20%)		2,657.70	
			39,316.92
Net Earnings			$18,879.47

1514 After an investigation of the books and records of the Company at its principal office, at Philadelphia, Pennsylvania, your Statistician is of the opinion that certain changes should be made in this statement, and submits the following Amended Income Statement covering the business for the said year ended December 31, 1918:

Income Statement 1918, *as Amended.*

Gross Revenue:

	Metered.	Unmetered.	Total.	
Water Rents—Private:				
Ordinary	$41,863.53	$5,166.00	$47,029.53	
Fire Protection	.....	706.67	706.07	
Water Rents—Municipal:				
Hydrants	.....	10,000.00	10,000.00	
Total Water Rents	$41,863.53	$15,872.67	$57,736.20	
Less Adjustments, etc.	.....	.....	274.74	$57,461.46

Miscellaneous Earnings:

Turning on Fees	193.50
Interest	479.93
Rent Bailey Farm	60.00
Meter Tests	1.50
Total	$58,196.39

Expenses:

Pipe Line	$3,607.07
Ada Pump	543.35
Beaver Pond	10.95
Service Pipes	335.72
Springs	230.58
Office Building	99.98
Meters	908.48
Auto Truck	420.07
Meter Inspection and Sealing	457.82
Purification of Water	396.39
Reading Meters	441.65
Inspection of Pipe Lines	441.71
Engineer and Firemen	2,276.37
Coal, Freight, &c., Ada	2,124.14
Water Purchased	6,406.82
Salaries—Bluefield	5,433.41

Salaries, Office Expense and Rent, Philadelphia	1,500.00	
Traveling Expense	44.00	
Workmen's Compensation Fund	18.95	
Rental through N. & W. Tracks	10.00	
Legal Expense	300.35	
Insurance	208.07	
Laboratory Expense	4.74	
Plumbers' Bonds	20.00	
Office Expense—Bluefield	921.11	
Taxes—Pipe Line, W. Va	3,445 00	
" License, City of Bluefield (2 years)	21.00	
" " Public Service Commission	36.00	
" Capital Stock, W. Va	240.00	
" Capital Stock, U. S	241.75	
" Special Excise, W. Va	53.85	
Increase Rate Case, Expense	1,328.85	
		$32,528.18
Net Earnings		$25,668.21

1515 It will be noted that the expense item of "Water Purchased" has been reduced in this amended statement to $6,406.62. The Company purchased 128,136,500 gallons of water from the Bluefield Valley Water Works Company during the year at the rate of six cents per thousand gallons. Prior to the year 1918, as appears in the record formerly made before the Commission, the charge was at the rate of five cents per thousand gallons. In view of the relationship existing between the two companies, as set out in the report of your Statistician, filed April 4, 1918, and the further fact that a rate of five cents allows a greater net return to the Bluefield Valley Water Works Company for 1918 then the net return of 1917, the investment of the said Bluefield Valley Water Works Company having not been added to during the year 1918. I am of the opinion that the rate should not exceed five cents per thousand gallons.

In the amended statement, "Salaries," "Office Expense" and "Rent" "Philadelphia"—has been reduced from $5,217.42 to $1,500.00. This is the amount claimed for the same service for the year ended December 31, 1917, as shown by the statement filed by the Company in Cases Nos. 59 and 368.

Federal Income Tax, to the amount of $461.10, has also been eliminated in this reconstructed statement.

The expense item "Increase Rate Case (20%)" has also been reduced from $2,657.70 to $1,328.85. This change conforms to the action of the Commission as expressed in its opinion in Cases Nos. 59 and 368, Bulletin No. 44, in which the Commission states: "If the item included as a part of operating expense as "Expense of Rate case" is a proper charge, the same should be spread over a period of ten years instead of five years.

As a measure for fixing rates, there should be added to the net

earnings, shown on the amended statement, the sum of $5,000.00, for the reason that, under the Commission's order of July 17, 1918, in Cases Nos. 59 and 368, the charge to the municipality of Bluefield for fire hydrants was increased $10,000 per year, but the said increase did not become effective until July 1, 1918, and only $5,000.00 of the said increase is reflected in the gross earnings
1516 set out hereinabove. As a measure for rate making, therefore, the net earning capacity of the plant, for the year ended December 31, 1918, was $30,658.31.

Additions to the plant for the year amounted to $1,095.61. Depreciation, of course, would more than offset this amount.

Kurtz Exhibit No. 2, filed in the case now pending, for the six months' period ended June 30, 1919, shows gross earnings of $32,142.67, expense amounting to $13,848.72 and net earnings of $13,293.95. Applying for this period the same basis used in making adjustment for the year 1918, "Water Purchased" expense would be reduced from $1,935.91 to $1,613.26, the tax charge from $2,944.06 to $2,125.32, and the "Rate Case Expense" from $1,108.37 to $554.18; reducing the expense as shown by the said exhibit from $18,848.72 to $17,153.15, and increasing the net earnings from $13,293.95 to $14,989.52.

Respectfully submitted,

H. E. NEASE,
Statistician.

1517 Copy.

November Fourth, 1919.

Hon. G. R. C. Wiles,
Chairman Public Service Commission,
Charleston, W. Va.

In re Case No. 895, Bluefield Water Works & Improvement Company. **Application to Change Water Rates.**

DEAR SIR:

The Engineering Department of your Commission was asked to make investigation and report on the advisability of additional fire protection in South Bluefield and Midway and the extension of water service and fire protection in the new Midway Addition. To this end an examination was made on the ground of those sections by Mr. Gallaher, Assistant Engineer, and interviews had with the officials of the Water Company and City of Bluefield. Certain data and maps were obtained to be used in making a study of this case. A meeting was held by the Mayor, City Solicitor, City Engineer, Chief of Fire Department and a representative from each of the Insurance Underwriters to decide where in their opinion additional fire protection should be afforded and additional mains laid. Maps showing the location of additional hydrants and mains as decided upon at this meeting *was* furnished to this Department. The recommendations of the West Virginia Inspection Bureau so far as

they relate to the water supply for the City of Bluefield *was* obtained.

These recommendations are attached hereto marked Exhibit
1518 "A." Detailed maps were prepared by this Department showing the present mains and hydrants, location and description of existing buildings, together with additional mains and hydrants recommended to be installed by this Department.

As to the additional fire protection in South Bluefield. It is respectfully recommended that additional hydrants be located at the following street intersections:

Augusta and Walton.
Adams and Walton.
Frederick and Woodrow.
Frederick and Woodland.
North and Woodland.
South and Vineyard.
Bland and Gilmer.
Albemarle and E. River.
Albemarle and Wythe.
Fulton and Albemarle.
Washington and Bay.
Jefferson and Bay.
Shenandoah and E. River.
Shenandoah and Wythe.
Pearl and E. River.
Pearl and Wythe.
Fairmont and Toledo.
On 4" main at Rose.

The map furnished by the City Solicitor also shows the location of additional mains to be laid in South Bluefield to furnish water to the new hydrants. It is believed proper that the location of any additional mains should be left to the judgment of the Superintendent of the Water Works Company so as to provide a well balanced system at the minimum expense to the Company. All mains, however, should be 6" or larger.

As to the Midway and new Midway Addition. It is respectfully recommended that additional mains be laid and that hydrants be located in the Midway Addition at the following street intersections:

1519 Williamson and Walters,
Alley and Walters,
Alley and Thorn,
Alley and Alder,
Alley and Lynn,

and that in the new Midway Addition four hydrants be placed as follows: One at the intersection of the County Road and South Street; another on the County Road at about 200 feet south of the corporation line and two others equally spaced on the County Road between the two hydrants above mentioned. All mains for fire protection in these additions to be 6" size or larger.

It is estimated the cost of the new construction complete in the Midway and new Midway additions will be approximately $16,000.00.

Respectfully submitted,

GEO. E. TAYLOR,
Chief Engineer.

G. E. T.-M.

1520 EXHIBIT "A."

West Virginia Inspection Bureau.

Recommendations for City of Bluefield, West Virginia.

June 29th, 1918.

Recommendations marked with a (*) are necessary in order to obtain a grading of three and one-half class.

Water Supply.

*1. That adequacy and reliability of the source of supply be thoroughly investigated, and provision made to insure an adequate supply of water for the entire year.

*2. That pending the carrying out of recommendation #4, the electrically operated valves be put in good condition and be operated daily at a regular hour, and that controls for these valves be located in the central fire station.

3. That a recording gage be installed at fire department headquarters.

4. That the entire city be supplied in one service under full high service pressure; present closed gates to be opened and the Bland Street tank kept in reserve.

*5. That the following mains be installed:
8-inch on Princeton from Bland to Mercer.
8-inch on Mercer from Bluefield to Pulaski.
6-inch on 4th from Thomas to Tyler.
6-inch on Roanoke from Pulaski to Bedford.

6. That all 3-inch and 4-inch pipe be replaced by mains not less than 6-inches in diameter and with 8-inch where the distance between cross-connections exceeds 600 feet.

7. That additional gate valves be installed to prevent the cutting out of more than 3 hydrants by a break in the mains.

8. That additional hydrants be installed in all parts of the City especially in the high value districts.

1521 Charleston, West Virginia,
November 14, 1919.

Offices of the Public Service Commission.

The further hearing is resumed, this the 14th day of November, A. D. 1919, in this case.

Appearances:

The Applicant, by Sanders & Crockett and A. G. Fox;
The City of Bluefield, by J. R. Dillard, City Solicitor.

Mr. Fox: If the Commission please, as the Commission knows, at the last appearance in this hearing, the City of Bluefield asked that the engineers for the Commission be sent to Bluefield to examine the situation there, and that the books of the Bluefield Water Works & Improvement Company be examined by the Public Service Commission's statistician and a report made. The statistician
1522 did examine the books of the Bluefield Water Works & Improvement Company, and has filed his report with the Commission, making some corrections in the statement of income, which we filed here on behalf of the Bluefield Water Works & Improvement Company. The largest of those corrections is in the amount of about $1,000 for water purchased, and he incorporates in his report the deductions in the expenses of the Philadelphia office, which we attempted to do in the examination of Mr. Kurtz, reducing that to $1,500.00 a year. He also deducts certain other sums or small amounts, such as Federal income tax, which Mr. Kurtz has shown on his report. He shows it for the year 1918, that the net earnings of the Bluefield Water Works & Improvement Company were $25,668.21, which is about $3,331.00 below the 8 per cent which was set by the Commission as a proper return upon the valuation of $360,000.00 on the plant. The State engineer,—the engineer of the Public Service Commission, after having gone over the situation in Bluefield, has filed a report, showing additional fire protection is needed in some parts of Bluefield, and setting out the intersections of the streets where he believes that additional fire
1523 hydrants should be located, and also certain portions of the City of Bluefield where additional mains should be installed. He states in his report that the cost of installing these mains in New Midway will be about $16,000.

We wish to put Mr. McCarthy, the Superintendent of the Bluefield Water Works & Improvement Company, on the stand to show the cost of these installations and of new mains, and to show by him the attitude of the Bluefield Water Works & Improvement Company in regard to these extensions. As was stated by counsel at the former hearing in this case, the Bluefield Water Works & Improvement Company is ready and willing to install this additional equipment,—these additional mains, provided the cost of installing these

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mains, under the present high price of material and labor, may be added to their capital investment as a permanent addition. In other words, the Bluefield Water Works & Improvement Company would not feel justified in putting in these additional improvements, under the present high costs, if at some future time the City of Bluefield would appear before the Commission and ask for a re-
1524 duction of the valuation placed on the plant of the Bluefield Water Works & Improvement Company. The attitude of the Bluefield Water Works & Improvement Company is this, that if this additional equipment is installed at this time, that they are entitled to have that additional cost, as of the time it was put in and installed, added to their present valuation of $360,000.00, and that their rates be increased to such an amount as will afford them a return of 8 per cent, both upon the present valuation of $360,000.00 and upon the additional capital necessary to invest at this time to put in these additional installations and equipment.

We would like to put Mr. McCarthy on the stand and show the cost of installing additional equipments and extensions in Bluefield and New Midway. The engineer states in his report he believes they should be put in under the supervision and control of the Manager of the Bluefield Water Works & Improvement Company, so that the plant may be well balanced, and that this additional equipment will not prove too much of a tax.

The attitude of the Bluefield Water Works & Improvement Company has been, since the beginning of this case four years ago, that the present water supply of the City is not adequate,
1525 that it is going to be necessary for them to go to some other place, at a large expense, to insure an adequate water supply. This additional water supply can not be found near the City of Bluefield; all the available sources there now are in use by this company and the supply is inadequate, and in a few years is going to be grossly inadequate. The installation of this new water supply,—the securing of it can only be done at a large expense. In order to do this for the protection of the City, and which is necessary now to protect the City from fire, it will be necessary to borrow money to put into this additional plant. Unless we can show a return upon our present investment it will be impossible for us to float bonds or borrow the money with which to put up this additional water supply.

Mr. Dillard: If your Honors please, just a word in reply: It's true that there is an additional water supply needed in Bluefield. It is also true as testified by Mr. McCarthy that the idea they had of a water supply was that all they had to do was to build a dam back there from Bluefield, and they have charged us with an amount here for the prospecting of the doing of that. The City of
1526 Bluefield, whenever they give us a water supply, we are willing to let this Commission add that increased cost to the plant, when they do that. I want to take issue with Mr. Fox in his statement that the statistician's report shows that we owe them anything or that they had made 8 per cent on the invesment of $360,000.00. In the conclusion of the statistician's report for the year 1918, he makes the following statement: "As a measure for

rate making, therefore, the net earning capacity of the plant, for the year ended December 31, 1918, was $30,668.31." Eight per cent on the $360,000.00 would only give them $28,800.00; therefore, they have received for the year ending December 31, 1918, more than 8 per cent on the fixed valuation of this property.

Now, as to the six months the Commission requested Mr. Kurtz to make a report of, and the Commission directed the statistician to make a report of, he finds for the six months, from December 31, 1918, yo June 30, 1918, $14,989.52—approximately $15,000.00, and you multiply that by two and you get then $30,000.00, whereas they are only entitled to the 8 per cent upon the amount invested of $360,000.00, which would be $28,800.00.

1527 Now, it is also true that your Honors directed an examination of this property, and directed your engineer to determine the advisability of the extensions for fire protection, and for domestic purposes. I want to agree for the City of Bluefield that, wherein those extensions are made new, and that if the Commission comes to the conclusion that the water works and improvement company did not extravagantly and from bad judgment, install a pipe that would have to be taken up, that then we ought to be charged,—the City of Bluefield and its inhabitants,—charged with the valuation of the property at the time of the installation as a fixed addition to the valuation for rate making purposes. In other words, if the City of Bluefield should request these gentlemen to put in certain mains this year, and it cost twice as much this year as it would two years from now, that then that price of the installation at the time they were installed should be added to the plant as a fixed addition; unless on account of mismanagement they have installed pipes and had to replace those pipes or change them in such a manner that by the application of business judgment, they could have foreseen and installed them at less cost. But taking either view of it, and if your

1528 Honors come to the conclusion that you should enter an order directing them to give us that additional service, I will agree with the gentlemen on the other side that this additional service shall be given within a reasonable time after the City authorities directs it, and let the actual cost of the service given at that time be added as a fixed valuation to this plant.

Now, we have some streets there that have been down for a number of years, and if we would tear them up at the present time, or if your Honors would direct the Bluefield Water Works & Improvement Company to tear them up at the present time, it would be a loss to the City of Bluefield, whereas we could possibly get along for two years, until the time arrives when we re-surface or rebuild those streets, and if it could be the City of Bluefield would like for your Honors to enter an order requiring the Water Company, if you come to the conclusion we are entitled to the additional fire protection and additional domestic service, at such time after reasonable notice as the City of Bluefield directs, but you can figure either way you want to on the statistician's report, and he finds the return at 8 per cent on the valuation is $28,600.00; he finds for the year 1918, ending

December 31st, that the net earnings of the Bluefield Water
1529 Works & Improvement Company was $30,668.31, and he finds that for the six months the neet earnings up to June 30th, my recollection, was $14,989.52, giving them in either event for both years more than 8 per cent on the valuation that this Commission placed upon the property.

Mr. Fox: If the Commission please, the statistician does state that the net earning capacity for the year 1918 was a little over $30,000, but he finds that the net earnings for that year were $25,668.00; for the first six months of the year 1919, which was filed at the request of the Commission, according to the statistician's amended statement, our net earnings were $14,989.00. As the Commission remembers, a good many of the items in this six months' report were estimated; whether or not those items were estimated correctly or not, we do not know, but for the first six months of this year does not form a positive method of determining what our income will be for the whole year. We can not wait until the end of the year 1919 to make our application. We had to take the end of the last year preceding the filing of our statement as the basis for what our net income
1530 was, and even according to the statistician's report, we are still $3,301.00 short in our net earnings for that year. The statistician's report speaks for itself. He says that our net earning capacity for that year was $30,000 00, but we didn't earn our capacity. We only earned $25,000.00. The City of Bluefield by its attorney has just stated that they wished the Commission to order certain improvements in our plant, and that these improvements be put in at the time the City may direct, after reasonable notice to the City. The money necessary to install this new equipment will have to be laid aside for that purpose; that money will have to be accessible and ready for use at any time the City may demand; this money will have to be secured and will be drawing interest at that time. We want to ask the Commission, whatever they decide will be the cost of the installation and additions, that they may order, be added to the $360,000.00, and that our rate of return be increased to meet the 8 per cent on that addition to our present valuation. It will not be possible for the Bluefield Water Works & Improvement Company to secure this amount of money at any time the City may want these additional improvements put in. It will be necessary to se-
1531 cure this amount of money and put it aside so it may be drawn on when these installations go in. I think it has been the policy of commissions in other states, principally Pennsylvania, to add the cost of the proposed equipment and installations to the then present value and increase the rates to meet that. The statistician shows we earned $25,668.00, and in his comments he says the net earning capacity of the plant for the year 1918 was $30,000.00. Why we didn't earn that I don't know.

Mr. Dillard: That is due to the deductions he made from what you claim you had a right to charge for and he claimed you had no right to charge for.

Mr. Fox: No sir, I think not.

Mr. Dillard: If Mr. Nease is present he might give the Commission the benefit of that explanation.

Mr. Fox: He makes those deductions in the report. Here is an itemized statement for that year of the revenue and expenses, but yet on the next page he says our capacity was $30,000.00; he doesn't say we earned it; he simply says we got $25,000 that year.

1532 Thereupon came WILLIAM MCCARTHY, a witness of lawful age, introduced on behalf of the applicant, who, being first duly sworn, testified as follows:

Direct examination.

By Mr. Fox:

Q. Mr. McCarthy, have you examined the report of the engineer made to the Public Service Commission in regard to the Bluefield Water Works & Improvement Company?

A. I have.

Q. Have you gone over that report carefully and noted at what places extensions are directed or recommended?

A. I have.

Q. Have you made an estimate of the cost of materials and installation of the additional extensions recommended in the report of the engineer?

A. I have.

Q. Have you a copy of that estimate with you?

A. I have.

Q. What do you find will be the cost of materials and labor for the extensions recommended in the New Midway section of Bluefield?

A. I have estimated the extensions needed or required, as recommended by this engineer spoken of, covering the New Mid-
1533 way extensions to be $11,656.93 for materials and $4,620.08 for labor costs, making a total of $16,277.01.

Q. What do you find will be the approximate cost of the South Bluefield extensions?

A. I estimate the extensions needed in South Bluefield, to meet the same requirements, for materials $9,289.02, and for labor $4,388.80, or a total of $13,677.82.

Q. Making the total cost for all the extensions recommended, how much?

A. $29,954.83.

Q. Please state by what method you arrived at the cost of these materials and of labor?

A. I took the City map and designated on this map the location of the new hydrants, as recommended by the Commission's engineer, and then taking the cheapest, most direct way of reaching those hydrants with 6 inch pipe from our present distribution system, and figured the actual cost of materials and labor at present market prices of the actual materials necessary to make these installations.

Q. In that estimation of cost was the estimate made as of a continuous operation, or was it made as if it was done piece-meal, as might be ordered, by anybody?

1534 A. Well, we are in this position: We have at this time no organization to begin a job of that kind. Our former organization is broken up; we have no foreman, or any man except a subforeman that we formerly employed, and I presumed it would be best to let this work by contract, and I believe that at this particular time that if we can get a party to bid on it at these figures it will be the best method for us to pursue.

Judge Sanders:

Q. What Mr. Fox means is this: Was your estimate of twenty-nine thousand and some dollars based on the beginning of this work within a reasonable time and the prosecution of it continuously until the completion of the work, or was that estimate on the theory that you would put in these improvements from time to time, as the City may order?

A. I figured they would be put in in the spring and put in with as much dispatch as we could command, after the spring weather set in, and we couldn't do it as economical in the winter as in the spring; but as we have no organization to handle this kind of work, the piece-meal proposition wouldn't make any particular difference, if we had an organization of our own and were able to put our own foreman on it and some experienced men we could do the—

1535 cheaper than a contractor, but not having that a contractor has as much advantage as we have in the matter, and I believe it would be better for us to contract it and the work is of sufficient size to interest a contractor doing that, and I believe we could have it done that way cheaper than if we would do it ourselves. However, we figure both ways; by turning it over to a contractor, and if we can't get it done for what we think it ought to cost, we will attempt it ourselves.

Q. Well, the cost of this work would be increased if you do it by piece-meal, wouldn't it?

A. Well, it would be,—if done by contracts, it would cost more than if done by ourselves; if we had the organization we could do it piece-meal, because there would be no overhead costs added, not even the depreciation on the tools.

Q. Well, if you had your organization and did part of the work, you would then have to disband your organization?

A. Yes sir; ordinarily in former times we always had an organization; we did enough work each year to keep an organization. What I mean is, a foreman that understands the busines

1536 and have a few calkers and a few men for handling pipe that understand the work and who can carry it along, with the green men picked up mixed with them, it wouldn't take long to get a good working force, and the work could be done cheaper than by a contract, with an overhead expense to take care of; but you see now we are in the same position any outsider would be in to

start that kind of work. We haven't a foreman in sight, and I believe, as things are now, we could have the work done by contract, by turning over the whole job, you understand, to one contractor, cheaper than we could do it ourselves. That is only surmise, you understand.

Mr. Fox:

Q. Would it be practical to commence this work before the beginning of next spring, or should it be commenced during the winter months?

A. Well, it can be begun any time, but it would be cheaper to wait and begin it in the spring.

Q. Is your estimate based on weather conditions as usually prevail in the spring, or on working conditions during the winter?

A. It is based on spring,—good weather and no overhead.

Q. I will ask you to state, for the benefit of the Commission, the attitude of the Bluefield Water Works & Improvement Com-
1537 pany in respect to these installations of these new extensions recommended by the State engineer?

A. Well, the attitude of the company has been expressed, I think, in these proceedings, ever since this rate case was started. We have always took the position we would put in anything the City wanted, provided we got a return on the money, and so far as I know that is the attitude of the company at the present time, insofar as it is possible to do so. At this particular time is not a time when heavy installations should be made, in my opinion; my judgment of the matter is that they shouldn't be made at this time, if there is any way to defer the matter. We saw what was coming four or five years ago, when this rate was forced on us by the City, and that was the particular reason at that particular time for trying to get the rates adjusted, so we could meet the demands of the City in the future, but unfortunately for the City and for ourselves the material and the market and labor conditions has been so thoroughly upset since that time, that it has not been a time when heavy installation should be made; it could have been made four years ago very nicely.

Q. Do you know what method the water company would follow in securing the amount of capital necessary to install these
1538 new extensions?

A. Well, I think this installation we have before us here could be taken care of,—I don't think the company is in such circumstances they couldn't take care of that very comportably, but what I had in mind, or what I regard of more importance to the City of Bluefield than the extension of these mains, is the improvement and betterment of the water supply. That is of first importance to the City, and the City don't seem to appreciate that fact; that is the thing I figure is of the utmost importance. We have been particularly favored by seasonal rains the past two years; if we had a dry season come on us, there would be at least three months we would be absolutely out of water, and I consider that of the utmost importance, and that is the big question with us, you understand.

I figure it will cost from two to three hundred thousand dollars, at least, for that, and that some provision has got to be made for that or the City is going to suffer.

Judge Sanders:

Q. Well, you would have to set apart, even though you have the money to make these improvements, some thirty thousand dollars?

1539 A. Yes sir. Of course it would have to be made available at the moment the work was undertaken in order to meet the pay roll and the payment of the material purchased.

Q. And this $30,000, or approximately $30,000,—I believe $29,954.33,—this money at the beginning of this work would have to be set apart and could not be used for any other purpose?

A. No, I would suppose not.

Chairman Wiles: The company would be entitled to interest during construction as soon as the money was set aside?

Judge Sanders: Yes sir, certainly.

Judge Sanders: The Commission has given us 8 per cent and we are not complaining about that, on the $360,000.00. We are only asking that the rates be fixed so we can get the 8 per cent at the end of 1918 we lacked over $3,000 of getting that. What we are going to lack this year we can't tell until the end of the year. We know what it was at the end of 1918 and it was twenty-five thousand dollars and something, which made it less by $3,000 than we are entitled to earn at 8 per cent on the $360,000.00

1540 Now, if the Commission can fix it so we can get that amount of money,—we are entitled to it for that year,—and whatever it is for 1919, we are entitled to be paid that amount for that year. That is what the statistician reports. We can't tell what it will be for this year until the end of the year.

Now, then, in regard to this added improvements, the company don't object to putting it in; the company is willing to put it in, at such time as the Commission may say, but I don't think we ought to have to put it in, a hydrant today and one tomorrow, and so on. If the Commission comes to the conclusion it is needed and ought to be done, then we want the Commission to require us to begin the work; then when we do begin it, we want you to add the $30,000 to the $360,000.00, which would make $390,000.00, and provide some revenue or raise the rates so as to permit us to make 8 per cent on the $390,000.00. That is what the company is asking.

Chairman Wiles: After you begin this work and set aside your money, if you would, under your financial circumstances, have to set aside the whole amount, you would be entitled to legal rate of interest on that.

Mr. Dillard: We have no objections to that.

1541 Chairman Wiles: Now, on the question of these extensions it seems the City is in no hurry about them being made.

Judge Sanders: Well, then, I don't understand the proceeding then.

Mr. Dillard: If your Honors want to impose upon them the duty to install that immediately, the City is willing for them to do that immediately, and give them the interest on that amount until it is installed, and when it is installed it ceases.

Mr. Fox:

Q. McCarthy, have you a copy of the estimate that you made on the cost of the installation of these new extensions?
A. Yes sir.
Q. Will you file that as part of your evidence in this case?
A. I will.

(The said statement is accordingly filed, and marked for identification "Exhibit McCarthy No. 1.")

Cross-examination.

By Mr. Dillard:

Q. What is the difference between your estimate and the estimate made by the engineer of the Public Service Commission?
1542 A. Well, I believe $277.01.
Q. You- is greater than his, is that correct?
A. Yes sir.
Q. How do you account for yours being greater than his?
A. That is on part of the estimate.
Q. You admit you are short from $100,000 to $150,000 in the necessary amount of money you ought to have to supply the inhabitants of the City of Bluefield with water, do you?
A. No sir.
Q. Well, how much?
A. Well, the question isn't right. I didn't testify along that line.
Q. How much did you tell the Commission it would cost you to furnish the requisite amount of water to the inhabitants of the City of Bluefield?
A. I stated it would cost between $200,000 and $300,000 to put in the amount of water necessary to take care of the City's requirements.
Q. Well, why don't you do that?
A. Because we can't do it with air.
Q. Then you are not furnishing the inhabitants of the City of Bluefield with the water they are entitled to?
1543 A. We are furnishing all we have.
Q. But you lack from $200,000 to $300,000 of furnishing the water they are entitled to?
A. No sir, that isn't right.
Q. Didn't you swear that a moment ago?
A. No sir.
Q. Are you ready to begin the installation of these pipes lines and these hydrants when the Commission orders it?

A. Yes sir, I think we can take care of them all right.

Q. And if the Commission directs you to begin at once, you are ready to begin at once and give fire protection and domestic water that we are entitled to?

A. Yes sir, I see no reason why we can't begin at any time.

Q. If the cost of the material and installation would depreciate 50 per cent, why just half of the amount necessary for you to expend there would be necessary to put in the supply the City asks for?

A. If material and labor would depreciate 50 per cent, yes sir, it would cost just half as much.

Chairman Wiles: Mr. McCarthy, how long would it take to put in these extensions spoken of, after you once begin the
1544 work?

A. It seems to me it ought not to take over about three months.

The witness is excused.

1545 *Certificate.*

STATE OF WEST VIRGINIA,
Public Service Commission, To wit:

We, L. W. Stanard, and R. O. Nuzum, Official Reporters for the Public Service Commission of West Virginia, hereby certify that the foregoing is a true and accurate transcript, to the best of our skill and ability, of all the testimony adduced before the Public Service Commission of West Virginia in relation to Case No. 895, application of Bluefield Water Works & Improvement Company for authority to change rates.

Given under our hands this the 25 day of November, A. D. 1919.

L. W. STANARD,
R. O. NUZUM,
Official Reporters.

1546 The Public Service Commission of West Virginia, Capitol Building, Charleston.

At a meeting of the Public Service Commission of West Virginia held on the 31st day of December, A. D. 1919.

Case No. 895.

In re Application of BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY for Authority to Change Water Rates.

This cause came on this day to be heard upon the application of the Bluefield Water Works & Improvement Company to increase the minimum charge to its consumers from 75 cents per month to $1.00 per month, and to reduce the amount of water allowed to its consumers thereunder from 2,500 gallons per month to 2,000 gallons per

month; upon notice of said application given as required by the rules of the Commission; upon the demurrer and answer of the City of Bluefield; the replication of the Bluefield Water Works & Improvement Company thereto, together with the exhibits filed with the pleadings in this cause; the report of the statistician and the engineer for the Commission; the testimony of witnesses for the petitioner and exhibits filed therewith.

1547 In all consideration of all which, the Commission is of opinion to and doth order,—

1st. That the said applicant is entitled to and it is hereby authorized to increase the minimum charge to its consumers from 75 cents per month, the amount charged in the schedule of rates now on file, to $1.00 per month.

2nd. That its application to reduce to its consumers the amount of water permitted to be used under said minimum rate per month from 2,500 gallons to 2,000 gallons per month be, and the same is hereby, refused.

3rd. That the said applicant company is hereby directed to proceed, with reasonable dispatch, taking into consideration weather conditions, to extend its water mains to South Bluefield and to Midway and New Mid-way addition of the City of Bluefield, of such capacity as will afford to same an adequate supply of water for fire protection, the installation thereof to follow the suggestion of the engineer of the Public Service Commission in his report herein referred to.

4th. Said applicant company shall keep an accurate account of the expense of the extensions hereinbefore provided for, and shall furnish the same to the Commission in a report thereof to it on or before the first day of July, 1920.

5th. The said applicant shall, as soon as practicable after the first day of July, 1920, make full report of its receipts and dis-
1548 bursements for the period beginning the first day of January, 1920, and ending the 30th day of June, 1920, including the increase in rates herein allowed, and in the event the net revenues are insufficient to afford to the applicant company a return equal to 8 per cent on its capital invested, including the extensions herein provided for, then the rates of the applicant company will be so revised and adjusted as to insure to said applicant company such return, and for this purpose only this cause is retained on the docket.

6th. The increased rate hereby allowed shall be effective as of the first day of January, 1920; and said applicant company is required to file with the Secretary of this Commission such amendment to its rates now on file as is herein provided for.

A Copy,
Teste:—
R. B. BERNHEIM,
Secretary.

1549 STATE OF WEST VIRGINIA:

Before the Public Service Commission of West Virginia.

Case No. 1138.

Application of BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY for Revaluation of Its Plant and Equipment Now Used and Useful in the Service of the Public, Located at Bluefield, West Virginia, and for Authority to Change Rates, Tolls, and Charges for Water at Bluefield, in the County of Mercer and State of West Virginia.

Comes now the Bluefield Water Works & Improvement Company, the petitioner herein, and respectfully shows to the Commission as follows:

(1) That it is a public service utility doing business under the laws of the State of West Virginia.

(2) That its principal place of business is in Bluefield, West Virginia, and that it is a public service utility engaged in the management and the operation of a water plant in the said City of Bluefield, Mercer County, West Virginia, and that as such public service utility it is subject to the provisions of chapter 15-0 of the Code of West Virginia, 1916, applicable to this class of public service utility.

(3) That at this time it has in effect the following schedule of rates, fares, tolls and charges:

Meter Rates: Monthly minimum charges $1.00.

All bills for water shall be computed monthly and rendered quarterly, except to Special Rate Consumers, upon the following rates and basis:

40 cents per 1,000 gallons for first 2,500 gallons and 30 cents per 1,000 gallons for all water used in excess of 2,500 gallons, computed on a monthly basis.

Special Rates.

Any consumer, desiring a lower rate can obtain same by executing a special contract at any one of the following rates:

1550

25¢	per 1,000	gallons.....	$6.75	monthly	minimum	rate.	
20¢	" 1,000	"	20.00	"	"	"	
18¢	" 1,000	"	54.00	"	"	"	
16¢	" 1,000	"	128.00	"	"	"	

Sprinkler Heads .06¢ each.

Minimum Rate $100.00 per year—6" Pipe—2,000 Sprinkler Heads charges to be paid quarterly in advance.

Minimum Charges.

For water supplied through				½″	Meter,	per	month	.....	$1.00
"	"	"	"	¾″	"	"	"	.....	4.75
"	"	"	"	1″	"	"	"	.....	6.00
"	"	"	"	1½″	"	"	"	.....	15.00
"	"	"	"	2″	"	"	"	.....	35.00
"	"	"	"	3″	"	"	"	.....	85.00
"	"	"	"	4″	"	"	"	.....	210.00

Fire Protection.

Private fire hydrants $40.00 per year, payments to be made quarterly in advance.

Stand Pipe Service—2″ line—$40.00. Over 2″ $100.00.

City of Bluefield—Fire Hydrant Service—$15,000.00 per year, payable quarterly.

Flat Rates.

Monthly minimum rate $1.00 for first opening.

For all other flat rate charges see schedule effective April 1st, 1908.

All Flat Rate charges payable quarterly in advance. That the applicant applies to the Public Service Commission of West Virginia for a revaluation of its plant, and for authority to change its rates for the reasons that:

(*a*) That this honorable Commission by its order entered in cases #59 and #368, fixed a value of the plant and equipment of the Bluefield Water Works & Improvement Company at $360,000.00, for rate making purposes; that the said sum of $360,000.00 so fixed by the said Commission did not, at the time the said order was entered, represent the true and actual value of the plant and equipment of this applicant for rate making purposes, and does not, at this time, represent the value of the plant of this applicant for rate making purposes; that the said sum so fixed by the Commission was not supported by any evidence introduced before the said Com-
1551 mission at the said hearing, and was, in fact, greatly below the sum fixed by any witness so testifying before the Commission upon the said hearings as to the value of the plant of the said applicant. That the evidence of the witnesses for the respondent City of Bluefield at the said hearings fixed a value of the said plant of the applicant at a sum greatly in excess of the value so arbitrarily arrived at and fixed by the said Commission. That the difference in the inventory values as set by the witnesses, Aivord and Miller, upon the said hearings, could and should have been harmonized by the Commission with the facilities at its command, and the value of the said plant should have been fixed at a sum representing the value as fixed by these two witnesses. That the said sum of $360,000.00 so

set by the said Commission is grossly inadequate for the purposes of rate making purposes, and does not represent the true and actual value of the plant of the applicant then and now used and useful in the service of the public, and that the order of the Public Service Commission in so arbitrarily fixing the value of the said plant in conflict with all the evidence introduced before the said Commission deprives this applicant of its property without due process of law, and is in violation of Section 1, Article XIV, of the Constitution of the United States of America.

(*b*) That the present, true and actual value of the plant and equipment of the Bluefield Water Works & Improvement Company now used and useful in the service of the public is approximately $1,000,000.00.

(*c*) That since the said order of the said Commission in fixing the value of the plant of the applicant at the said sum of $360,000.00 which the applicant again denies represents the true and actual value of the said plant, that the value of the said plant has greatly increased, and that numerous and large additions have been made to the said plant, and the said order and sum so fixed by the said Commission does not take into consideration or allow a return on the additions and improvements made in the said plant since the
1552 entering of the said order or the increase in the value of the said plant since the said order was entered.

(*d*) That the present rates of return does not afford the petitioner a net return of 8% upon the value of the plant, which is uniformly allowed by this Commission.

(*e*) Operating expenses and costs of material render the increase rate asked for imperative.

(*f*) That the growth in population and industries in the City of Bluefield make it absolutely necessary that the applicant, in the near future, expend large sums of money to secure and place in the service of the public additional supplies of water, and that it will be impossible for this applicant to secure the sums necessary to secure this additional supply of water and supply the equipment necessary to deliver the same to the inhabitants of the City of Bluefield, unless this applicant is allowed a sufficient return upon the present actual value of its plant to enable it to float bonds or other securities for the purposes of raising the money necessary to secure the supply and equipment to furnish the present and ever increasing demands.

(5) That application is hereby made for authority to change the rates of the said applicant in the City of Bluefield, County of Mercer, and State of West Virginia, and to put into effect the following charges in the schedule of rates, as authorized by this Commission:

Domestic meter rates monthly minimum charge, $1.00.

All bills for water shall be computed monthly and rendered quarterly, except to special rate consumers, upon the following rates and basis:

50¢ per 1,000 gallons for first 2,000 gallons, and 50¢ for 1,000 gallons for all water used in excess of 2,000 gallons, computed on the monthly basis.

Special Rates.

Any consumer desiring a lower rate may obtain same by executing a special contract at one of the following rates:

1553

30¢ per	1,000	gallons,	$6.75	monthly	minimum rate.
25¢ "	1,000	"	20.00	"	" "
20¢ "	1,000	"	45.00	"	" "
16¢ "	1,000	"	126.00	"	" "

All other rates to remain as fixed by the Public Service Commission by order issued December 31st, 1919.

(6) That to refuse to place a value upon the said plant, and equipment of the applicant which will fairly represent the present value of the plant and equipment now used and useful in the service of the public, and to establish a rate based upon any value so fixed by the Commission which is not a fair and just valuation of the said plant for rate making purposes, will be in violation of Article XIV of the Amendments to the Constitution of the United States, in that this applicant will be deprived of the use of its property without due process of law, and that private property will thus be taken for public use without just compensation, and this applicant relies and depends upon the protection afforded it by said provisions of the Constitution of the United States.

(7) That there are no other public service utilities interested in this schedule or change of rates.

Wherefore this applicant prays that the said Public Service Commission of West Virginia shall fix a date for the hearing and taking of evidence upon the present value of said property of the applicant used and useful in the public service. That should there be a conflict of opinion as to the value of the said plant by the witnesses so testifying before the Commission, that the said Commission use the facilities at its command for the purpose of inquiry and investigation into every item entering into the true value of the applicant's property, and that such facilities be used by the Commission in harmonizing any conflict in the evidence introduced before it as to the value of the said property, and that the Commission arrive at and fix a value upon the said plant that will be fair and just to this ap-
1554 plicant. And this applicant further prays that after due hearing and investigation upon this application that the Public Service Commission may make an order fixing a value upon the plant of the said applicant for rate making purposes, and that the said Commission may make an order granting the application herein, and establishing the proposed rates and changes as prayed for in this

application, or such fares, tolls and charges as this honorable Commission may find to be equitable in the premises.

Dated this 3rd day of December, A. D. 1920.

BLUEFIELD WATER WORKS & IMPROVEMENT CO.,
By WM. McCARTHY, *Superintendent.*

1555 STATE OF WEST VIRGINIA:

Before the Public Service Commission of West Virginia.

Case No. 1138.

Application of BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY for Revaluation of Its Plant and Equipment Now Used and Useful in the Service of the Public, Located at Bluefield, West Virginia, and for Authority to Change Rates, Tolls, and Charges for Water at Bluefield, West Virginia.

The Demurrer and Motion to Quash and Answer of the City of Bluefield, a Municipal Corporation, to the Application Filed Herein.

The City of Bluefield, a Municipal Corporation, demurs to and moves to quash the application of the Bluefield Water Works & Improvement Company filed in this case and for grounds of said demurrer and motion, says that said application is not sufficient in Law and that the matters and things set up in said application in so far as they relate to the valuation placed upon the property of said applicant in its former decision in a former case is res adjudicata and not waiving the benefit of said demurrer and motion to quash is relying and insisting upon same for answer to said application:

Says that the matters and things contained in paragraphs one, two and three of said application as relating to the character of business of the applicant, its principal place of business and its schedule, rates, fares, tolls and charges now in effect are true.

The Respondent hereby resists and protests against this application in so far as it asks for authority to increase its present rates and denies paragraphs *a, b, c. d. e,* and *f* of the said application in toto, and says that the valuation fixed by your honorable commission in a former case wherein the property used and useful for rate making purposes was fixed at $360,000.00 was at the time the commission so fixed same and is now an excessive valuation for this property, for

1556 the reason that the said applicant company has never at any time since the fixing of this valuation been in position to furnish to the City of Bluefield and its residents and inhabitants an adequate supply of water at all times, as the said applicant company is required to do under its franchise and under the Laws of this State, but on the contrary this respondent avers that by reason of the neglect and disregard of the said applicant company in its duty to the City of Bluefield, its citizens and inhabitants, has failed

on a great number of occasions and for great lengths of time, since the aforesaid valuation was fixed by your commission, to furnish water to all of the inhabitants of said city at all times; that by reason of the negligence of said applicant company in permitting the waste of its water and its failure to conserve same has permitted its water supply to become so low and inadequate on various occasions and for great lengths of time that the business sections and schools of the City of Bluefield were entirely without water; and by reason of its negligence and utter disregard of the performance of its duties on its part the said applicant company has not provided sufficient facilities at its pumping stations at all of its springs to bring the water from the said pumping stations to the City of Bluefield and its inhabitants; and that on account of all of these things the said citizens and inhabitants of the City of Bluefield have been put to great cost and trouble in obtaining water for domestic and other uses since the aforesaid valuation was made.

This respondent denies that there has been any appreciable additions to the valuation of the property of the applicant company since the last valuation was placed upon same by your commission, but on the contrary avers that in a number of instances the items considered by your commission in fixing the valuation at $360,000.00, as aforesaid, have been totally taken out of the property used and useful by this company for rate making purposes and, therefore, that the depletion of the property in this particular is at least equivalent to any additions which may have been made to said property for said purposes since its last valuation.

1557 This respondent by way of answer claiming affirmative relief in this case says: that by reason of the negligence of the said applicant company in conserving its water in tanks or reservoirs and permitting the same to be wasted in large quantities at all of its tanks, recepta-les and reservoirs the supply has on various occasions for great periods of time been wholly inadequate to meet the needs of the citizens and inhabitants of the City of Bluefield for fire protection, domestic use and other purposes.

This respondent further avers that the applicant company has negligently failed and refused to equip itself with a sufficient number of pumps and other apparatus at its pumping stations in order to convey to the City of Bluefield and its inhabitants the necessary quan-ity of water at all times, as it is required to do under its franchise and under the Laws of this State.

This respondent further avers that the applicant company has negligently permitted its water supply to become impure and to be polluted and that the water is now and has been for sometime impure and this respondent is informed is a constant menace to the health and life of the inhabitants and citizens of the City of Bluefield.

This respondent, therefore, prays that the application filed herein may be dismissed and that the said applicant company be required to provide itself with sufficient sanitary water by erecting and building reservoirs, tanks or other receptacles to contain an ample supply of water at all times to meet the needs of the inhabitants and citizens of the City of Bluefield for all purposes, and that the applicant com-

pany may be required to purify the water so furnished to the inhabitants of the City of Bluefield and remove any source of pollution of same; and that the applicant company be required to so equip itself with pumps and other apparatus at its several stations to enable it to carry the water from same to the inhabitants and citizens of
1558 Bluefield at all times in adequate quantities; that the property of the applicant company be appraised by one of the engineers of the Public Service Commission and a valuation placed upon same which is used and useful for the purposes of this company and make his report of same to your commission; that an audit of the books of the company be made by a statistician of your commission since January 1st, 1915 to the time of filing this application; that the said engineer be directed to report on the removal or abandonment of any of the property of said company since January 1st, 1915, and the value of same at the last date it was used and useful for the purposes of said applicant company.

In witness whereof the said City of Bluefield has caused this answer to be signed in its name by C. O. Stahlman, its Mayor and its official seal to be hereto attached this 8th day of December, 1920.

THE CITY OF BLUEFIELD,
WEST VA.,
By C. O. STAHLMAN, *Mayor.*

1559 STATE OF WEST VIRGINIA:

Before the Public Service Commission of West Virginia, Charleston.

Case No. 1138.

Application of THE BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY for Revaluation of its Plant and Equipment Now Used and Useful in the Service of the Public, Located at Bluefield, West Virginia, and for Authority to Change Rates, Tolls, and Charges for Water at Bluefield, West Virginia.

The Reply of the Bluefield Water Works & Improvement Company to the Demurrer and Motion to Quash and Answer of the City of Bluefield Filed Herein.

The Bluefield Water Works & Improvement Company not waiving or abandoning the allegations and statements made in its application filed herein, but relying and insisting on the same, for answer and reply to the demurrer, motion to quash and answer of the City of Bluefield, or so much of the said demurrer and motion to quash and answer of the said city, as it is advised it is necessary for it to make answer unto, answering says:

1st. That the valuation of $360,000.00 fixed by your honorable Commission was not, at the time the said sum was so fixed, the true value of the said plant for rate making purposes, and is not now the

true value for rate making purposes, but is far below the true value of the plant and property, and that the true value of the said plant, at the time of the making of the valuation aforesaid, and at the time of this application and answer, is greatly in excess of the sum so fixed by the said Commission, and in truth and in fact, is
1560 approximately $1,000,000.00 and that a re-valuation of the said plant will show that the actual value of the plant and equipment of the said company is approximately the sum last named.

2nd. The Bluefield Water Works & Improvement Company, applicant, denies the allegation that it has never, at any time, since the fixing of the said valuation of $360,000.00 by your honorable Commission, been in a position to furnish the city of Bluefield and its inhabitants an adequate supply of water. And the applicant further denies that it, at any time, has been negligent or disregarded its duty to the city of Bluefield, its citizens and inhabitants, or that by reason of any negligence or disregard of the said Company in its duty to the city of Bluefield, or its inhabitants, that it has failed on any occasion, or for any length of time, to furnish water to all the inhabitants of the city of Bluefield, and calls upon the said city for strict proof of the said allegations contained in their pleading filed herein. And the applicant company also denies that by reason of any neglect or negligence on the part of the said company that its water supply has become low and inadequate on any occasion, or for any length of time. And the applicant company denies that it has permitted the waste of its water or failed to conserve the same, and calls for strict proof of these allegations by the said City of Bluefield. And in answer to the said allegations contained in the answer filed herein by the said City of Bluefield, the applicant company says that it cannot, with its present equipment, secure and store up a quantity of water adequate to supply all of the citizens of the city of Bluefield at all times with water. And the applicant here reaffirms and restates the allegations contained in its pleadings in the former hearings before your honorable Commission on previous hearings, and says that before this applicant company will be in a position to furnish at all times an adequate
1561 supply of water to the citizens of Bluefield, that it will be necessary for this company to erect and maintain large storage reservoirs in which a large quantity of water may be impounded for use during the dry periods of the year. And the applicant company further says that it is dependent for its supply of water upon springs, and that the flow of these springs and the supply of water available to this company is dependent, in a large measure upon the rain fall in the locality and vicinity of the said springs. That during certain seasons of the year these springs furnish a supply of water in excess of that demanded by the consumers of the said water company, but that when a long dry season exists, as was the case during the summer of 1920, that the flow from these springs is inadequate to meet all the demands of the city of Bluefield and its inhabitants. But this applicant in reply to the answer of the said

city of Bluefield filed herein here again reaffirms its statements made heretofore herein, and says that the erection and maintenance of these storage reservoirs hereinbefore mentioned will not increase the revenue of this company in any manner whatsoever; that the erection of the said reservoirs for the impounding of water for use during dry periods will not and cannot produce a revenue sufficient to pay interest upon the money invested in the said reservoirs. And this defendant is advised and so believes and charges that no duty rests upon the said applicant company to so construct and maintain these large additions to its present plant, unless a return is granted by the said Commission to the applicant company, sufficient to afford to the said company a fair return upon the value of its present plant, and also upon the value of the additions and improvements necessary to be made to meet all of the demands of the public at all times. And in reply to the allegations contained in the answer of the said city that the applicant company has permitted its water to be wasted in large quantities at all of its tanks, receptacles and reservoirs
1562 and that by reason of the said waste their supply, on various occasions, for great periods of time has become wholly inadequate, says that the said tanks and reservoirs referred to by the said city in its answer are fed by gravity from certain springs widely scattered upon the slopes of East River Mountain; that there is no way known to this company by which the natural flow from these springs can be exhilarated or retarded. That at certain periods during the day the use of the water from the tanks into which these springs flow by gravity becomes so limited that the tanks referred to are filled and overflow, and at certain other times during the day the demand upon these tanks becomes so heavy that the supply in the said tanks is consumed and the overflow mentioned is stopped. That the overflow of these tanks is not caused by negligence of the applicant company, but is caused by natural forces and causes over which this company has no control. And in further answer to the said allegations this respondent says that it has, at all times, and upon all occasions, been diligent in the service of the public, and has, at all times, been in a position to, and has, furnished to the said city of Bluefield and its inhabitants as large a quantity of water as it is possible for it to do with the present plant and equipment of the said company. This respondent further admits that it is true that for a short length of time during the past year it was unable to supply all the inhabitants of the town with water, but that this failure upon the part of the said company to so supply the water was not due to negligence or neglect on the part of the said company, but was due, as aforesaid, in part to the failure of its supply, due to a prolonged and severe dry season, and, in part, to inevitable and unavoidable accidents to its pumping equipment. But this applicant says in answer thereto, that until large storage reservoirs are installed it will be impossible for this applicant to install
1563 pumping machinery which would be entirely efficient or which would justify the outlay of money necessary to install the machinery.

3rd. This applicant denies that there have not been appreciable additions to the value of the property of the applicant company since the last valuation placed upon the same by the said Commission, and says that numerous and valuable additions to the said plant have been made, as is shown by the inventory made by John W. Alvord & Company, which will be filed by this applicant as a part of its evidence before the said Commission. And this applicant denies that a number of the items considered by the said Commission in fixing the said value have been taken out of the property used and useful by this company, and of this too the said applicant calls upon the said city for strict proof of its allegations contained in its said pleading.

4th. This applicant denies that the water in its tanks or reservoirs has been wasted in large quantities, and this applicant denies that there is an insufficient number of pumps at pumping stations to convey water to the city of Bluefield; and this applicant denies that it has negligently permitted its water to become impure or polluted, and denies that the same is now, or ever has been, impure or that the same is a constant menace to the health or lives of the inhabitants of the city of Bluefield, and of this, also, the applicant calls upon the respondent city for strict proof.

5th. And the applicant company here reiterates all the statements and allegations contained in its previous application filed herein, and says that it is not adverse to the examination of the said property by one of the engineers of the said Public Service Commission, or that the said engineer make his report to your Commission; nor is it adverse to having an audit of the books of the said company made by the statistician of the said Commission. And
1564 this applicant further denies that the valuation of the said plant is res adjudic-ta, and says that it is advised and so believes and charges that the former order of the said Commission expressly states that the said matter referred to in the said order is not a final decision of the said question, and that the Supreme Court of this State refused to take jurisdiction of the said case and pass upon the said value so fixed by the said Commission, for the reason that the said matter was not finally determined by the said Public Service Commission.

6th. Bluefield Water Works & Improvement Company is advised and upon said advice believes and charges that the present return of the said Company allowed by your honorable Commission is inadequate and insufficient, and that to compel this company to continue to furnish water to the citizens and inhabitants of Bluefield upon the rates, tolls and charges now in effect, would result in the taking of the property of this applicant for the use of the public without adequate compensation, and is in violation of the Constitutional Provision cited in the original application filed herein. And this applicant is further advised and so believes and charges that any order made by this Commission requiring this applicant to make other and further additions to its said plant without first guaranteeing

to the said company an adequate return upon the money so necessary to be invested, as well as upon the present value of its said plant by increasing the rates, tolls and charges of the said company to an amount sufficient to afford this company an adequate return upon the total value of its plant as the same now exists, and as the same will exist after the erection of the storage reservoirs herein alleged to be necessary, would be unjust, unreasonable and void, in that it would be a taking of the property of this applicant for the use of the public without just compensation therefor, and would also be in violation of the 1st section article XIV of the Constitution of the United States above referred to. And this applicant further says that it will be impossible for it to raise the sums necessary to
1565 construct and maintain the said additions to its plant unless it is allowed by your honorable Commission a sum sufficient to pay a reasonable return upon the value of the additions necessary to be made, and upon the value of its present plant.

And now having fully answered and replied to the said answer of the City of Bluefield, or so much of the said answer as the applicant is advised it is necessary for it to make answer unto, this applicant prays that the application originally filed herein be heard, and that the relief prayed for therein be granted. That the value of the said plant be fixed at a sum commensurate with the true value of the said plant used and useful in the service of the public. That your honorable Commission determine the amounts necessary to be expended by this company in the erection and maintenance of dams and reservoirs sufficient to impound a supply of water which will meet the demands of the city of Bluefield and its inhabitants at all times of the year, and that a return be granted to this company based upon the present actual value of the said plant and equipment, together with the sums necessary to be expended in the erection and maintenance of the dams and reservoirs aforesaid. And the applicant Bluefield Water Works & Improvement Company will ever pray, etc.

Dated this 22 day of September, 1920.

BLUEFIELD WATER WORKS &
IMPROVEMENT CO.,
By WM. McCARTHY,
Superintendent.

1565½ Case No. 1138.

Bluefield Water Works & Improvement Company.

Application for Authority to Change Water Rates.

Testimony Adduced Before the Public Service Commission of West Virginia at a Hearing Held on the 18th Day of January, A. D. 1921.

Appearances:

The Applicant by A. G. Fox, of Sanders & Crockett, attorneys, Bluefield, W. Va.

The Protestant, City of Bluefield, by John R. Dillard, City Solicitor, Bluefield, W. Va.

L. W. Stanard, Reporter.

1566 NOTE.—Motion is made by Mr. Dillard to postpone the hearing of this case for the following reasons:

First. When this application was filed we asked for an appraisement of the property of this company by the engineers of your Commission. There has been no appraisement since about 1916, except a partial appraisement made by the auditor of the applicant. We also ask for a report by your Statistician on the condition of this business from that time until the present time. He tells me it will be a week before he can get that report up. The appraisement heretofore made I take it would be of little value to this Commission and of little value to the City of Bluefield in the hearing on this application, and we certainly can't go into the trial of this case without the report of the statistician. For those reasons I ask for a postponement of this case until such time as we can have the property appraised by the Engineering Department of this Commission, and we would like to have this settled for once and all the time. The gentlemen in their application of this company charge this Commission with having arbitrarily fixed the rates and valua-
1567 tion of the property, without having taken into consideration any evidence at all, and this case is sometime going to finally wind up in the highest court that it can go to, that is the court of last resorts, and we would like to prepare this case, if you will give us time and the valuation, with a view to that end. We can't intelligently go into this case, certainly without the report of the statistician, and he informed me sometime ago or one of the Commissioners that he wouldn't have his report ready before sometime next week.

NOTE.—Mr. Fox objected to a postponement of the case, and stated that applicant has its witnesses now here present, and requests that he be given permission to proceed.

Commissioner Lewis: Judge Dillard, in case of this kind, don't you think, if the applicant is prepared to file *their* financial statements, that *they* ought to be permitted to do so, so that the statistician would have them to check up?

Mr. Dillard: Ordinarily that is true, but owing to the fact we have no figures as to the valuation of this property, I think not in this case.

Commissioner Lewis: We wouldn't expect you to cross
1568 examine the witnesses at this time, but you can cross examine the witnesses later.

Mr. Dillard: If you want to do that, that is all right.

Commissioner Lewis: You can recall their witnesses later for cross examination.

Mr. Fox: The City and Commission both were furnished a copy of this inventory last November; they had an opportunity to go into that at that time. There are some statements made by Mr. Dillard we deny; the allegations contained in his answer we also deny. The question we wish to go into today is to get this case disposed of, so far as possible with our witnesses here. We want to do that and expect the Commission to compel as much cross examination as possible to keep from bringing these witnesses back here. We are being deprived of income every day it is delayed.

Mr. Dillard: In reply to that, they did furnish us this statement. There is not a valuation of an item on it. I understand they added the valuations to the items they furnished the Commission. They have some reason, best known to themselves, for withholding these valuations from the City of Bluefield and its counsel.

1569 Mr. Dillard: I understand we will have an opportunity to cross examine these witnesses later on in regard to any matters we desire.

Commissioner Rider: Yes sir, only any matters pertaining to the books.

Mr. Dillard: Your Honors can see from this statement Mr. Fox claims they furnished me that there is not an item of valuation as to any item. I am under the impression they were valued in the statement furnished to the Commission.

Mr. Fox: That valuation was sent here last week with these other things, the first time it has been furnished to anybody.

Commissioner Lewis: Judge Dillard, in the matter of the appraisal you request by our engineers, to go over there and measure that property and take an inventory of it would be almost impossible to do, unless you would uncover a lot of it. In fact the only thing our engineers could do would be to take the inventory of their material and get the unit prices and apply to them, and see whether the appraisal or the valuation as given by these other engineers are the proper units.

1570 Mr. Dillard: Your Secretary so wrote me several days ago that you so decided. I thought that was a hardship on the City and taxpayers, to require us to inventory this property, and it strikes me your engineering corps could do that and I wouldn't want it done by anybody else. If the Legislature doesn't appropri-

ate to you the necessary money to do the necessary things and get the information in these matters your Commission is practically at an end. I don't know what will be required, but we do think the great State of West Virginia ought to give us an opportunity to know about that,—ought to give us the facts about that.

Commissioner Lewis: I undersand an inventory would take several months.

Mr. Dillard: Well, suppose it does, that would once and for all time determine this matter. It took the Bluefield Water Works & Improvement Company, with, as Mr. Fox says, the greatest expert in the world, a year on that matter, and it seems the great State of West Virginia should furnish that to the City of Bluefield.

Commissioner Lewis: We are sorry we are limited in funds in that respect.

1571 Mr. Dillard: Then, if your Honors rule that, we ask that you give us the best you can.

Commissioner Rider: We will do that, Judge Dillard. We will check up the inventory here and give you the benefit of the engineers to go on the ground and check it up.

Mr. Dillard: We would prefer that, your Honor.

Mr. Fox: We were informed and came prepared to go into this hearing at this time, on the assumption that the inventory as checked in 1915 would be accepted as the true inventory of this property. If the Commission is going to allow a re-examination or physical examination of this property on the ground, and is going to delay this case until that is made, we would like to postpone the hearing of this whole case until that time; but we are prepared and came here with the understanding the inventory of 1915 would be accepted.

Commissioner Lewis: The statement made here was that our engineer would check your inventory and apply unit prices, and which probably would have been done had it not been for the fire and that matter probably would have been completed now, but that matter will be done and the Commission would not bind itself by

1572 saying it would accept any engineer's report, unless bound by a decision that settled that question. We think that you would hasten the case by submitting your statements today, and give counsel an opportunity to cross examine any of their employees, and counsel for applicant will have an opportunity to cross examine them, the same as the protestants cross examining your witnesses.

Mr. Fox: My understanding is this: That the valuation made by Alvord and Miller is to be checked by your engineers.

Commissioner Rider: Yes sir, that is it.

Mr. Fox: I understand from the Commission that you do not mean that the case is going to be delayed while the engineering department goes there and makes a complete revaluation, but simply a check of the valuation.

Commissioner Rider: Yes sir, that is it. We tried to make that clear.

Mr. Dillard: I so understood it that way, gentlemen. However, if they desire to wait and give me a definite unit value of their

inventory; without the value I can't tell one thing about and
1573 couldn't cross examine about, it is perfectly satisfactory to us.

Mr. Fox: The question of unit values, the matter of the inventory is a matter of physical facts; the question of units is a question experts may differ about. Now, if the City wants to take another unit of valuation or another theory, then that is a matter of proof before the Commission, and the Commission can accept whichever they want.

Commissioner Lewis: We will say here, gentlemen, that our engineering force is very much handicapped by the records having been destroyed.

Thereupon came L. R. HAUSON, a witness of lawful age, who, being first duly sworn, testified as follows:

Direct examination.

By Mr. Fox:

Q. Mr. Hawson, how old are you?
A. Thirty-four.
Q. What is your profession?
A. Hydraulic and Sanitary Engineer.
1574 Q. What was your education and preparation for this profession.

A. I was educated at the University of Wisconsin as a Civil Engineer, graduating and taking my Bachelor degree in 1908; I received the Professional or Master of Science degree in 1912 from the same college.

Q. What year did you complete your education?
A. In 1908.

Q. How long have you been engaged in Hydraulic and Sanitary Engineering as a profession?
A. Since 1908.
Q. Where have you been located?

A. I have been located in Chicago with the firm of Alvord and Burdick, first as assistant and for the last five years as a member of the firm.

Q. Were you connected with this firm of Alvord & Burdick in 1914, 1915 and 1916, at the time they made an inventory and valuation of the property of the Bluefield Water Works & Improvement Company?
A. I was.
Q. Did you participate in that work?
A. In a supervisory capacity.
Q. The inventory made at that time was made by what representative of your office?
1575 A. By Mr. A. T. Luce.
Q. Under the supervision of Mr. Alvord?
A. Yes sir.

Q. Since the inventory made in 1915, has there been any supplemental inventory made of the property by your firm?

A. Yes sir, in July of this year I visited Bluefield and ascertained the facts relative to additions to the property which have gone out of service in the five year interval, and prepared a supplemental report to the 1915 inventory.

Q. Does the inventory of 1915, as amended and revised by the inventory of 1920, correctly set out and show the physical component parts of the applicant company?

A. Yes sir.

Q. Has that been brought up to date, showing the parts that have become obsolete and the parts discarded, and showing in detail all the parts of the company?

A. Yes sir, up to date of July 1st, 1920.

Q. Have the parts of the company which have become obsolete and unused been deducted from the parts of the company which now constitute the plant in the 1920 inventory?

A. Yes sir, and the supplement to the inventory so states.

1576 Q. Does this inventory of 1915 to the present time correctly show, for the purpose of valuation, the property of the Bluefield Water Works & Improvement Company?

A. The inventory of 1915, together with the supplement as of July 1st, 1920, correctly shows the property as of that date, 1920.

Q. I hand you two documents, one marked for the purpose of identification "Inventory of the properties of the Bluefield Water Works & Improvement Company, Bluefield, West Virginia, January 1st, 1915, Alvord & Burdick;" and another marked for identification "Supplement to the inventory of the Bluefield Water Works & Improvement Company, covering construction from January 1st, 1915, to July 1st, 1920,—November 1920,—Alvord & Burdick" and ask you if these are the two inventories of the property made by your firm?

A. They are.

Q. Is the inventory of 1920, the smaller of the two documents, based upon an actual physical examination and inventory of the property?

A. It is.

Q. I will now ask you to file these as part of your testimony, marked as stated in the question?

1577 A. I do so.

Mr. Dillard: Objected to by counsel for the City of Bluefield, for the reason that the inventory of 1915 is not a proper document in evidence in this case, and for the further reason that the witness has not shown himself sufficiently familiar with the contents of the two documents to introduce same.

Commissioner Rider: The exhibits referred to may be filed, and the motion overruled.

Mr. Fox:

Q. I will ask you to take the inventory of 1920, and state to the Commission exactly how that was made and what it shows, and dis-

cuss in a general way what the items of substitution to the physical properties of the plant has been since the inventory of 1915?

A. The supplemental inventory covering the construction from January 1st, 1915, to July 1st, 1920, which was submitted in November, 1920, covers all changes made since the preparation of the original inventory under date of January 1st, 1915; it covers both additions and deductions from the 1915 lists. I visited Bluefield, ascertained the facts relative to construction which had been
1578 added in the five year period, ascertained the facts with regard to property which had become obsolescent during that period and prepared the statement, the inventory bearing date of November, 1920, in which the facts regarding the several items of physical plant were set forth. This supplemental inventory shows in detail the additions and subtractions of the constituent parts of the water works property which were affected in any way between 1915 and 1920. The first part of the inventory consists of a summarization of the quantities; the principal costs in the five year period were incurred for mains, additions to the distribution system; the detailed list of mains by sizes, locations and lengths are shown in the rear, in the latter part of the supplement in detail.

Q. I will ask you to state just how extensive your work since your graduation from school, as above stated, has been in the inventorying and valuation of public utilities,—give a brief outline of some of the work you have been engaged in, and how extensively during the past eight years?

A. My work since my graduation from college has practically all been in the Hydraulic and Sanitary engineering line;
1579 that involves everything from the investigation of proposed projects, the preparation of detailed plans and specifications, supervision of construction, supervision of operation of properties and the inventorying and valuation of properties. In the matter of valuations, I have been engaged upon nearly fifty different properties, from Charleston, S. C., York, Ind.; New Albany, Sterling, Freeport, Ill., Chippewa Falls, Green Bay, Wis., and very many others. I have testified before the State Utility Commissions of Indiana, Illinois, Wisconsin, and I have in the last eight years devoted about half of my time to the question of inventory and valuation of water works properties.

Q. Based upon the inventory which you have introduced as part of your evidence, I will ask you if you made a valuation of the present plant of the Bluefield Water Works & Improvement Company now used and useful in the service of the public?

A. Yes sir, I have in conjunction with Mr. Alvord, the senior member of our firm; both of us worked on this matter.

1580 Q. Both you and Mr. Alvord, the senior member, worked in the construction of this valuation?

A. Yes sir.

Q. What method was used in making this valuation?

A. The cost of reproduction method.

Q. The reproduction new less depreciation theory?

A. Yes sir.

Q. What unit prices were used in placing the value upon the different component parts?

A. Upon two basis of unit prices, one on the basis of the prices prevailing in the five year period prior to the war,—the average prices for those years prior to 1915,—1910 to 1915; then, we made a second valuation on the cost of reproduction estimate, using prices prevailing as of the latter part of 1920, both estimated through on the cost new theory, according to the sinking fund method.

Q. I will ask you if this is known as the Wisconsin theory of valuation?

A. It is the method usually used by the Wisconsin Commission.

Q. The Wisconsin plan is spoken of by Mr. Nease in his report?

A. I can't say as to that.

Q. Does this report upon the value of the Bluefield Water Works & Improvement Company correctly set out and show the present actual value of this plant for rate making purposes?

1581 A. Yes sir, it is — the best of our opinion the value of the property.

Q. I hand you a document, marked for identification, "Report on the value of the Water Works Properties of the Bluefield Water Works & Improvement Company as of July 1st, 1920," and ask you if this is the report made by you, as stated, upon the value?

A. It is.

Q. I will ask you to file this report upon the value as part of your evidence, marked as set out in the question.

(The same objection.)

A. I so file the same as requested.

Q. You stated you used two sets of unit prices in the fixing of this value, one based upon the unit prices prevailing for the five years preceding the European war. I will ask you to take your report and show what the reproduction new cost is, based upon the pre-war prices?

(Objected to, as the report is the best evidence; overruled.)

A. The cost of reproducing the Bluefield Water Works & Improvement Company property as it now exists, using prices prevailing in the five year pre-war period, is $624,548.00, that being the depreciated value.

1582 Q. What is the reproduction price, based on the present prices?

(Same objection.)

A. The present worth of the cost of reproducing the Bluefield Water Works & Improvement Company properties, using prices prevailing as of the latter part of 1920, is $1,194,663.00.

Q. In placing your value upon the property, did you use as a value either the reproduction new based on the present year costs or the reproduction new based on pre-war costs?

A. No sir, I believe neither one of these represents the value of the

property, but that the value is somewhere intermdiate between the two.

Q. From your study of the history of prices in this country, and your study of the conditions existing in the country today, what can you say of the fairness to both the utility and the public of those prices?

(Objected to.)

A. I believe that either price is unfair. We believe that the value is or should be predicated upon the future usefulness, future conditions; that rates must necessarily operate in a future period and not in the past, and that therefore any correct determination of
1583 value must take into consideration conditions which are going to prevail in the future. All values are regulated in that way. The price of stocks or other securities is not predicated largely upon the earning value of the past; it is predicated upon the amount that it is figured they will earn in the future. The same thing prevails with reference to any business or anything of value. We, therefore, believe that the correct value of a water works property must be the value which must be arrived at by a consideration of prices which will probably prevail for the period for which the rates are to be in effect. There are few, if any, believe that pre-war prices are going to return in the near future, if ever. Also few who believe that the present prices are going to prevail over any length of time. Accordingly, a valuation or a cost of reproduction estimate made upon the basis of unit prices prevailing prior to the war represents the minimum, the extreme low measure of value, and the cost of reproduction made, using present values, represents the probable maximum limits of value. In order to formulate some idea as to the trend of future prices, we have made an extensive study
1584 of the trend of wages and commodities in the years following the Civil War. The results of that study are shown on a diagram following sheet 10 in our report on the value. This diagram shows that during the Civil War average prices of labor increased 60 or 70 per cent; that they continued increasing after the war for a period of six or eight years, then gradually decreased, until they reached a point about 40 or 50 per cent above normal. Then, new and normal conditions was established, which prevailed over the next thirty or forty years, the wage curve constantly increasing at a rate on a line parallel to the rate of increase prior to the war, but about 50 per cent above. Coming to the world war, we find in 1915 prices began to increase in a manner similar to the way they did in the early part of the Civil War; that they continued to increase, and at the present time are nearly double what they were before the war. Now, applying the same experience as was observed after the Civil War, it is probable that prices will again recede, but that they will never reach what was known as pre-war normal; in fact,
1585 based upon the Civil War, they will never recede below 50 per cent above what was pre-war normal. In other words, if the average weighted average throughout the country of labor was 30 cents prior to the war, based upon the best knowledge available,

it will be 45 cents in the few years hence, when the prices will again have established a normal. Accordingly, we have taken this into consideration in arriving at our conclusions as to the value of this property. We have taken the pre-war estimate of $624,000 as a minimum, and the present price basis cost of reproduction of $1,194,663.00 as the maximum and, based upon the best knowledge available, have concluded that in the period probably covered by a rate schedule now to be established, the cost will revert to half way between the two extremes, and have thus arrived at the value of the property of $900,000.00.

Q. Then, as a result of this investigation and study, you place the present actual value of the property of the applicant at around $900,000.00?

(Same objection.)

A. Yes sir, that is the best of our ability and opinion as to the value.

1586 Q. What is the cost of the additions to the plant of the applicant since 1915, based upon a pre-war basis of valuation?

A. Arriving at the results by deducting the reproduction value of 1915 from the reproduction value using pre-war prices, at the present time would be about $80,000.00.

Q. What is the cost based on present prices,—what is the value based on present prices of the additions shown in your supplemental inventory?

A. Approximately $140,000.00.

Q. In this value that you have placed upon the property of the company, what disposition was made or how were those parts of the plant that have become obsolete or taken out of the use of the company treated?

A. They were deducted from the inventory and not considered in any way in the valuation. That is, they appear in no way in the estimates of cost, either pre-war or present price basis; omitted entirely.

Q. Then, in giving a value and depreciated at 100 per cent, it is not placed in the value at all?

A. They were not placed in the value at all.

Q. You have stated you used in this method of valuation the reproduction new less depreciation theory of valuation. I wish you would state in the record just what this method of valuation

1587 contemplates, and why it was used by you in preference to past costs?

A. The cost of reproduction new less depreciation theory involves the placing of unit prices upon the quantities making up the several parts of the property; the sum thus produced is depreciated for the several items, based upon a knowledge of the age, life, adaptability for the service it is performing, character of maintenance, possibility of future obsolescence and all other factors affecting its life. The depreciation thus secured is deducted from the cost of reproduction new and gives the present cost of each particular structure. We use the cost of reproduction theory on account of our

belief that, if the property is performing its service well, is performing the service at less cost than it can be performed in any other way, is performing a service in a community which is growing and which, accordingly, will continue to require that much service or more, the minimum measure of its value is the cost of reproduction under conditions humanely possible; that is, it involves a reconstruction in the future, under conditions likely to exist in that
1588 future period. It has always been our contention that past cost, even under normal conditions, more or less recent past costs, did not furnish a good evidence of value under the present abnormal conditions, in which prices of all commodities, labor and everything entering into a water works property, are very abnormal,—approximately double normal, and which will never again reach what was known as pre-war normal; that the past cost has very little significance in the consideration of value. It is interesting historically, but so far as indicating the value of the property which must necessarily operate in the future, under rates which must prevail in the future instead of in the past, that the cost of reproduction must be given greatest consideration.

Q. And that is the reason you have adopted this method for your valuation?

A. Yes sir.

Q. Mr. Hawson, in case past cost is used for the determination of value, does the past cost method of valuation contemplate the deduction of depreciation from the past or book cost?

A. No sir, the past cost method of valuation, strictly applied, consists of a determination of the amount of money which
1589 has been invested in a property, that amount being neither appreciated nor depreciated, but being taken at just what it shows.

Q. What can you show as to the fairness to the utility of the taking of past cost as a method of valuation and deducting depreciation from the book cost, without adding appreciation to that value?

(Objected to by counsel for respondents.)

A. I believe that the past cost analysis, from which depreciation is deducted and no appreciation is added, is unfair to the utility.

Q. State your reasons for that conclusion, please?

A. My reason is that the past cost analysis is the analysis of the books to show the actual cash expended in a property, and that when you depreciate and appreciate the past cost you are applying reproduction methods to it; the past cost correctly depreciated and appreciated is really nothing more or less than a reproduction estimate, and a past cost depreciated and not appreciated or vice versa would be an unfair method.

Q. Be unfair to the utility on the one hand and unfair to the city on the other?

A. Yes sir.

1590 Q. Were you furnished by the Bluefield Water Works & Improvement Company financial statements showing in detail the income and operating expenses of the Bluefield Water Works

& Improvement Company for 1920 and the four years previous thereto?

(Objected to.)

A. Yes sir.

Mr. Fox: With the permission of the Commission, to prevent taking this witness off the stand and introducing the treasurer, I would like to introduce at this time these statements, with the understanding I will introduce the treasurer a little later to show they were taken from the books of the company.

Commissioner Rider: Very well.

Mr. Fox:

Q. Have you those statements?

A. Yes sir.

Q. These statements furnished you by the Bluefield Water Works & Improvement Company purport to show the income and operating expenses from 1915 to 1920 in detail, and for 1920 the actual income and operating expenses for the first eleven months, and the estimated income and expense for the 12th month of that year?

A. Yes sir.

1591 Q. Based on these statements furnished you by the Bluefield Water Works & Improvement Company, did you make an analysis of the income and operating statistics of the Bluefield Water Works & Improvement Company?

(Objected to.)

A. Yes sir, I did.

Q. I hand you seven sheets marked "Bluefield Water Works & Improvement Company Profit and Loss Account" and marked for the purpose of identification "Hawson 1 to 7, inclusive" and ask you if these are the statements furnished you?

(Objected to.)

A. Yes sir, they are.

Q. I will ask you to file those as part of your evidence, marked as set out in the question?

(Same objection.

A. I so file them.

(Said sheets are accordingly so marked and filed.)

Q. I hand you a document marked for identification "Analysis of the Income and Operating Statistics of the Bluefield Water Works & Improvement Company, January 5th, 1921," and ask you if
1592 that is the report made by you, based upon the statements which you have just filed?

(Same objection.)

A. Yes sir.

Q. Will you introduce that as a part of your evidence, marked as set out in the question?

(Objected to.)

A. Yes sir. I call your attention to the fact that this copy has one sheet in which an alteration has been made.

(The said statement is accordingly so marked and filed.)

Q. Have you made a study and investigation of these Profit and Loss sheets furnished you by the utility for the past five years?

A. Yes sir, I have.

Q. And as a result of that study you have written this report, marked "Analysis of the Operating Statistics"?

A. Yes sir.

Q. Since coming to Charleston I will ask you if you have made any correction or addition to the report as formerly made by you?

A. Yes sir, Table 22 in that report has been changed slightly; new sheets have been written, which have not, however, been
1593 bound in the copy,—the sheet not bound in the copy introduced as an exhibit.

Q. I will ask you to place this sheet in the copy introduced and make it a part of the exhibit?

(Objected to.)

A. I will do that. (The witness did so.)

Q. In this connection I neglected to ask you if there had been any change made in the reproduction estimate as formerly made by you since coming to Charleston?

A. Yes sir, in the one which has been filed as an Exhibit there should be two sheets added, and one sheet will have a change, for which I have a sheet to replace it.

Q. I will ask you to take that copy and make that change at the present time?

A. Yes sir, I will do so. There is also one additional sheet in the supplement to the inventory.

Q. Have you made that correction in the inventory?

A. No sir, I have not.

Q. I will ask you to make that at the present time and file it as part of your evidence?

A. Yes sir, I will do so. (The witness did so.)

Q. I believe that you have in this analysis embodied the result of your study and investigation in two tables printed in the back
1594 of the report, marked Table 1 and Table 2?

A. Yes sir.

Q. What is the gross income shown on this table for 1919?

(Objected to.)

A. $67,702.59.

Q. What is the net income for 1919 as shown?

(Same objection.)

A. $21,193.66.

Q. Upon what amount does this net income equal a return of 8 per cent?

(Same objection.)

A. Upon $264,000.00.

Q. What is the net income shown for 1920?

(Same objection.)

A. $21,206.43.

Q. Upon what sum is this an income of 8 per cent?

(Same objection.)

A. Upon approximately $264,000.00.

Q. Have you estimated the income and operating expenses for the year 1921?

A. Yes sir, I have as shown in the last column of Table No. 1.

Q. How was this estimate arrived at?

(Same objection.)

1595 A. It was arrived at by a forecast of income and a forecast of each of the seven sub-items making up the operating expenses, this forecast being based upon a knowledge and a study of the cost expended for each of these items in prior years.

Q. On this estimated income and expense for the year 1921, what will be the net income for the year 1921?

(Same objection.)

A. Estimated at $20,375.00.

Q. I will ask you to state upon what sum this will be a net income of 8 per cent?

(Same objection.)

A. Upon approximately $254,000.00.

Q. The sums of $264,000 and $254,000 mentioned by you representing the value upon which this return would equal an income of 8 per cent?

A. Yes sir.

Q. I will ask you to state what your investigation has shown in regard to the relation of the increase in income and operating expenses since 1915?

1596 A. My investigation has shown that the gross income has increased from practically $44,000 to $78,000, somewhat less than double; that the cost of operation has increased from $26,000 to $58,000, considerably more than double, and that the net over that period has remained approximately constant, although the investment in the plant has increased nearly $100,000.00.

Q. Assuming that the Commission has placed 8 per cent as a fair return upon the value of the property, as the basis of rate making for this utility, I will ask you if the present income of the company,

as shown by your investigation, produces a fair return, based on the 8 per cent standard?

(Objected to.)

A. No sir, the net income at any time in this five year period has not equaled 8 per cent, even upon the Commission's value of 1915.

Q. I see that in your report you have made out another table marked "Table No. 2," and I will ask you to state just what the purpose of this table was, and how your calculations shown thereon were arrived at?

A. This table shows the gross income which would be required to produce 7 per cent return and 2 per cent depreciation upon the various valuations of the Bluefield Water Works & Improvement
1597 Company which have been placed in evidence at various times. The values for which these figures are shown cover Alvord & Burdick 1915 book cost, plus additions to date,—Miller's 1915 valuation, plus additions subsequently; Alvord & Burdick's prewar cost to reproduce introduced in evidence today; Alvord & Burdick's value as of the present time, and the Commission's 1915 value, plus costs subsequently; the gross income must necessarily be made up of the cost of operation, which is estimated for 1921 to be $58,500.00, plus an allowance for depreciation, plus an allowance for return; the total income at the present time or as estimated for 1921 is $78,875.00. To produce a 7 per cent return and 2 per cent depreciation on Miller's 1915 valuation for the City, with additions subsequently, would require a gross income of $101,700.00. To produce the same income on Alvord & Burdick's 1915 book cost, plus additions, would require an income of $103,860.00; to produce the same net income
1598 above operations on the Commission's 1915 valuation of $360,000, plus additions, would require a gross income of $98,820.00; upon Alvord & Burdick's value at the present time, as outlined in this report, would require a gross income of $139,500.00. All of these gross incomes are mightily in excess of the income which will be produced under the existing rates, varying in amount from $20,000 to $60,000, and requiring an increase on the present rate schedule of from 25.3 per cent to 110 per cent. As a result of this investigation, it is our conclusion that, based upon any valuation heretofore made, or which can now be fairly made, the company is entitled to a substantial increase.

Q. In arriving at the operating expenses and fixed charges, I will ask you — computed the cost of the water purchased from the Bluefield Valley Company, whether at 50 ce per thousand gallons or the actual cost, and how it is shown in y ncome?

(Objected to.)

A. It was computed at actual cost, as shown by the company's books, less $1,440.00 per year, which the company has been
1599 charging, that being 6 per cent on the $24,000 of preferred stock of the Bluefield Valley Water Works Company. In our investigation we have considered the water works property as one property, and accordingly have omitted any duplication of fixed

charges. The report at the bottom of Table No. 1 sets forth that the pumping at Bailey Spring is included at the cost of pumping only.

Mr. Fox: I believe that is all, unless I have omitted something.

Mr. Dillard: You can stand aside, with the understanding I can recall him at a date to be fixed by the Commission for cross-examination.

The witness is excused.

Thereupon came HARRY M. KURTZ, a witness of lawful age, who, being first duly sworn, testified as follows:

Direct examination.

By Mr. Fox:

Q. How old are you, Mr. Kurtz?

1600 A. Forty-five years old.

Q. Where do you live?

A. Philadelphia, Pennsylvania.

Q. What is your business?

A. Secretary and Treasurer of the Bluefield Water Works & Improvement Company.

Q. What are your duties in connection with this occupation?

A. Keeping the books of accounts and other detail matters.

Q. Then, you are the bookkeeper in charge of the records of the Bluefield Water Works & Improvement Company at their Philadelphia office?

A. Yes sir.

Q. Are these books and records and accounts made up from information gotten from your office, or where does the information come from on which you base your book statements of accounts?

A. Principally from the Bluefield office.

Q. They are furnished you by who?

A. By Mr. Rhodes and Mr. McCarthy.

Q. Mr. Rhodes, what position does he hold with the company?

A. Cashier at Bluefield.

Q. And Mr. McCarthy is the Superintendent?

A. Superintendent, yes sir.

1601 Q. In connection with your duties with the Bluefield Water Works & Improvement Company, did you make up a statement showing the Profit and Loss account for the Bluefield Water Works & Improvement Company from 1915 to 1920?

A. I did.

Q. I hand you seven sheets, which are marked Hawson 1 to 7, and ask you if you made up these reports?

A. I did.

Q. From what source did you derive the information you placed on those reports?

A. From the books of the company.

Q. Those are the same or copies of the same statements that you furnished John W. Alvord or Alvord & Burdick of Chicago?

A. They are.

Q. Does these statements correctly show the Profit and Loss statements as carried on the books of your company at your Philadelphia office?

A. They do.

Q. And were they correctly made up from the information furnished you by the Bluefield office of the Bluefield Water Works & Improvement Company?

A. They were.

1602 Q. I will ask you to identify those statements you have in your hands as the same statements furnished Alvord & Burdick, and adopt them as part of your evidence in this case?

A. I do so. I may state, however, that the statement for 1920 is only the statement for the first eleven months and estimated for December; the accounts for December are not yet completed.

Q. Did you make up this estimate in your own office for December, 1920?

A. Partly so, and the balance through the Bluefield office on information furnished.

Q. Is that as near as you can arrive at the true income and operating expense for the month of December, 1920?

A. It was at the time the statement was prepared.

Q. And was that based on the operating expenses and income for the past eleven months of that year?

A. It was.

Mr. Dillard: With the same understanding, he can stand aside, your Honors.

The witness is excused.

1603 Thereupon came A. L. RHODES, a witness of lawful age, who, being first duly sworn, testified as follows:

Direct examination.

By Mr. Fox:

Q. How old are you, Mr. Rhodes?

A. 47.

Q. Where do you live?

A. At Bluefield, W. Va.

Q. What is your business there?

A. I am employed by the Bluefield Water Works & Improvement Company as their office man.

Q. How long have you been employed by them?

A. Twelve or fourteen years.

Q. What are your duties in connection with the Bluefield Water Works & Improvement Company?

A. General office duties.

Q. In connection with your duties, do you make up and transmit to the Philadelphia office of the company the income received from water rent and other sources of income in the City of Bluefield, and also the operating expense and cost of running the plant and transmit them to the Philadelphia office?

A. The operating expenses and that end is in charge of
1604 Mr. McCarthy; he furnishes them; I furnish all other information, financial, receipts, etc.

Q. This information is taken from the books in your office and furnished to the Philadelphia office?

A. Yes sir, it is.

Q. And the reports filed here or the statement showing Profit and Loss was taken from information furnished by your office?

A. Yes sir.

Q. Was the information furnished by your office to the Philadelphia office a correct statement of income and matters reported by you to that office?

A. To the best of my ability, yes sir.

Mr. Dillard: With the same understanding, he may stand aside.

The witness is excused.

Thereupon came WILLIAM MCCARTHY, a witness of lawful age, who, being first duly sworn, testified as follows:

Direct examination.

By Mr. Fox:

1605 Mr. McCarthy, you are Superintendent of the Bluefield Water Works & Improvement Company?

A. I am.

Q. Do you furnish to the Philadelphia office of that company statement showing the cost of operation and expense of the Bluefield Water Works & Improvement Company?

A. I do, yes sir.

Q. You have seen the statements introduced here in evidence by Mr. Kurtz as to Profits and Loss for the past five years, and I will ask you if the statements furnished him during this time by you in regard to the operating cost and expenses of the company is correct, as shown by your office in Bluefield?

A. They are correct, yes sir.

Mr. Dillard: With the same understanding, he may stand aside.

The witness is excused.

Commissioner Lewis: As soon as we ascertain the time at which the engineer and statistician will have their respective reports completed, we will then fix a date or have you gentlemen fix a date agreeable to you. If you find you can't fix a date, we will fix a date.

1606 Mr. Dillard: I would like to ask whether it would be possible to hold the next hearing at the City of Bluefield, if satisfactory to these gentlemen?

Commissioner Lewis: It may be. We do hold such hearings, and if we can give you that opportunity we will do so. Our practice is to do that when we — requested. Of course if you desire to examine our statistician and engineer it is best to do that here. We will hold your request in abeyance, and if we can so arrange it to take them there we will do so.

Mr. Fox: In response to that request of Mr. Dillard's, I would like to state, if the statistician and engineer make a report here before the Commission, we will almost certainly want to examine them, and the applicant company feels that it is only in justice to itself that it does examine these gentlemen on these reports, and so far as we are concerned we will come to Charleston and examine our witnesses here.

Mr. Dillard: All right, sir; that will be all right with me.

Profit and Loss Account, December 31, 1915.

Credit Balance January 1, 1915				$9,950.09
Gross Earnings:				
Water Rents			$43,034.62	
Interest			272.20	
Rent Bailey Farm			75.00	
Lumber			384.95	
Midway Water Co.			94.78	
Cancelled Insurance			5.22	43,866.77
				$53,815.86
Debit:	M. & S.	Labor.		
Pipe Line	143.31	1,645.19	1,788.50	
Ada Pump	298.75	191.86	490.61	
Beaver Pond	151.20	141.77	292.97	
Service Pipes	178.11	187.24	365.35	
Springs	19.74	387.54	407.28	
Meters	552.09	751.03	1,303.12	
Tanks	11.36	.....	11.36	
Auto Truck	564.32	.....	564.32	
Sterilization of Water	82.44	.....	82.44	
Meter Inspection & Sealing	15.71	.....	15.71	
Coal, Freight & Hauling	2,314.78	.....	2,314.78	
Inspection of Pipe Line	.....	900.00	900.00	
Engineers & Firemen	.....	2,257.45	2,257.45	

Profit and Loss Account, December 31, 1915.—Continued.

	M. & S.	Labor.		
Office Building & Shop	28.10	.....	28.10	
Water Map & Tools, Expense	153.97	.....	153.97	
Salaries Bluefield			4,800.00	
Salaries Philadelphia			4,800.00	
Rent "			400.00	
Rental through N. & W. Tracks			10.00	
Insurance 18.90	231.83	.....	250.73	
Legal Expense			250.60	
Laboratory Expense			19.73	
Public Utilities Ass'n.			25.00	
Plumbers' Bonds			25.00	
Workmen's Compensation Fund			60.31	
Office Expense $76.19-$1,062.47-$1.25			1,139.91	
Sidewalk Repair			10.56	
Sundry Accounts			31.20	
Taxes: Pipe Line, W. Va.		3,062.50		
Special Excise, W. Va.		36.10		
Capital Stock " "		240.00		
License Bluefield		10.50		
Income U. S.		90.68		
			3,439.78	
				26,238.18
Depreciation $4,655.10-$75.17-$58.29				$27,578.68
				4,788.56
Credit Balance 12-31-15				$22,790.12

Profit and Loss, December 31, 1916.

Credit Balance January 1, 1916				$22,790.12
Gross Earnings:				
Water Rents			$43,350.13	
Interest			614.15	
Turning on Fees			251.75	
Inventories			943.29	
Rent Bailey Farm			63.50	
Cancelled Insurance			11.10	
Lumber			4.00	
				45,237.92
				$68,028.04
Debit:	M. & S.	Labor.		
Pipe Line	168.33	1,989.19	2,157.52	
Ada Pump	130.61	34.44	165.05	
Service Pipes	171.74	279.13	450.87	
Springs	14.58	479.65	494.23	
Meters	280.89	251.96	532.85	
Tanks	15.34	.....	15.34	
Auto Truck	583.17	.....	583.17	
Meter Inspection & Sealing	.80	.....	.80	
Electric Valve Line	.06	.....	.06	
Coal, Freight & Hauling	1,769.54	.....	1,769.54	
Sterilization of Water	168.46	104.53	272.99	
Beaver Pond	38.60	957.54	996.14	
Inspection of Pipe Line	.....	900.00	900.00	

Profit and Loss, December 31, 1916.—Continued.

	M. & S.	Labor.		
Engineers & Firemen	.....	1,478.70	1,478.70	
Salaries Bluefield			5,010.95	
Salaries Philadelphia			4,800.00	
Rent "			400.00	
Rental through N. & W. Tracks			10.00	
Charity (Red Cross)			20.00	
Insurance			230.38	
Legal Expense			261.75	
Laboratory Expense			31.47	
Office Expense			893.05	
Plumbers' Bonds			20.00	
Traveling Expense			24.63	
Workmen's Compensation Fund			51.27	
R/W through lot 13, Sec. 31			1.25	
Taxes: Pipe Line, W. Va.		3,206.22		
Special Excise, W. Va.		64.20		
Public Service " "		36.10		
Capital Stock " "		240.00		
Excise U. S.		128.40		
Increase Rate Case 20%			3,674.92	
			1,215.80	
				26,462.73
				$41,565.31
Depreciation				5,536.98
Credit Balance 12-31-16				$36,028.33

Profit and Loss Account, December 31, 1917.

Credit Balance January 1, 1917				$36,028.33
Gross Earnings:				
Water Rents			$49,697.30	
Interest			290.47	
Turning on Fees			181.00	
Rent Bailey Farm			63.85	
Water Rent Adjustments			9.60	
Meters			840.00	
				51,082.22
				$87,110.55
Debit:	M. & S.	Labor.		
Pipe Line	$110.66	2,846.31	2,956.97	
Ada Pump	373.37	190.90	564.27	
Beaver Pond	3.36	.....	3.36	
Service Pipes	101.46	244.67	346.13	
Springs	16.69	576.16	592.85	
Meters	205.80	344.45	550.25	
Tanks	27.13	69.62	96.75	
Office Building	57.98	.....	57.98	
Auto Truck	307.71	.....	307.71	
Meter Inspection & Sealing	38.60	.....	38.60	
Sterilization of Water	530.28	38.27	568.55	

Profit and Loss Account, December 31, 1917.—Continued.

	M. & S.	Labor.	
Coal, Freight & Hauling	3,243.11	.....	3,243.11
Water Purchased	7,288.14	.....	7,288.14
Inspection of Pipe Line		950.00	950.00
Engineers & Firemen		2,172.17	2,172.17
Salaries Bluefield			5,100.00
Salaries Philadelphia			4,800.00
Workmen's Compensation Fund			35.95
Rent Bluefield			940.30
Rent Philadelphia			400.00
Rental through N. & W. Tracks			10.00
War Time Insurance & Protection			98.60
Insurance 1917			240.40
Traveling Expense			27.26
Legal Expense			204.35
Laboratory Expense			22.64
Public Utilities Assn.			25.00
Office Expense			778.72
Plumbers' Bonds			20.00
Equipment Charged off			3.00
Increase Rate Case (20%)			2,286.95
Taxes: Pipe Line, W. Va.		3,355.00	
Special Excise, W. Va.		66.19	
Public Service " "		34.20	
Capital Stock " "		240.00	
Capital Stock U. S.		66.00	

Income " "	264.76	4,026.65	39,566.66
			$47,543.89
Depreciation			4,401.37
Credit Balance 12-31-17			$43,142.52

Profit and Loss Account, December 31, 1918.

Credit Balance January 1, 1918				$43,142.52
Gross Earnings:				
Water Rents			$57,461.46	
Interest			479.93	
Turning on Fees			193.50	
Rent Bailey Farm			60.00	
Accounts Payable			33.34	
Meter Tests			1.50	
				58,220.73
				101,372.25
Debit:	M. & S.	Labor.		
Pipe Line	121.90	3,485.17	3,607.07	
Beaver Pond	10.95	.....	10.95	
Ada Pump	366.70	176.65	543.35	
Service Pipes	103.89	231.83	335.72	
Springs	31.33	199.25	230.58	
Meters	322.83	585.65	908.48	
Office Building	99.98	.....	99.98	
Auto Truck	420.07	.....	420.07	
Sterilization of Water	387.64	8.75	396.39	
Coal, Freight & Hauling	2,124.14	.....	2,124.14	
Water Purchased	7,688.19	.....	7,688.19	
Meter Inspection & Sealing	16.18	441.64	457.82	
Reading Meters		441.65	441.65	
Inspection of Pipe Line		441.71	441.71	

Engineers & Firemen	2,276.37	2,276.37	
Salaries Bluefield		5,433.41	
Salaries Philadelphia		4,800.00	
Workmen's Compensation Fund		18.95	
Rent Philadelphia		400.00	
Rental through N. & W. Tracks		10.00	
Traveling Expense		44.00	
Insurance		208.07	
Legal Expense		300.35	
Laboratory Expense		4.74	
Office Expense		938.53	
Plumbers' Bonds		20.00	
Increase Rate Case (20%)		2,657.70	
Taxes: Pipe Line, W. Va.	3,445.00	.....	
Special Excise, W. Va.	53.85	.....	
Public Service " "	36.00	.....	
Capital Stock " "	240.00	.....	
" " U. S.	241.75	.....	
Income " "	461.10	.....	
License City of Bluefield	21.00	.....	
		4,498.70	
Accounts Receivable		50.62	
			39,367.54
			$62,004.71
Depreciation			3,658.36
			$58,346.35
Dividend 3% on $312,000			9,360.00
Credit Balance 12-31-18			$48,986.35

Bluefield Water Works & Improvement Company.

Profit and Loss Account, December 31, 1919.

Credit Balance January 1, 1919				$48,986.35
Gross Earnings:				
Water Rents			$66,396.33	
Interest			1,091.26	
Turning on Fees			123.50	
Rent Bailey Farm			65.00	
Forfeit on sale of Old Boiler			25.00	
Meter Tests			1.50	
				67,702.59
				116,688.94
Debit:	M. & S.	Labor.		
Pipe Line	1,149.52	3,185.25	4,334.77	
Ada Pump	836.87	120.40	957.27	
Service Pipes	317.63	451.00	768.63	
Springs	64.66	251.50	316.16	
Meters	423.07	493.00	916.07	
Auto Truck	272.46	.....	272.46	
Meter Inspection & Sealing	43.50	500.13	543.63	
Reading Meters		542.63	542.63	
Inspection of Pipe Line		499.74	499.74	
Engineers & Firemen		4,076.51	4,076.51	
Sterilization of Water	519.27	.....	519.27	

Coal, Freight & Hauling	5,131.16	.....	5,131.16	
Water Purchased	5,306.43	.....	5,306.43	
Salaries Bluefield			6,208.65	
Salaries Philadelphia			4,800.00	
Workmen's Compensation Fund			33.65	
Rent Philadelphia			400.00	
Rental through N. & W. Tracks			10.00	
Insurance			245.84	
Legal Expense			225.00	
Laboratory Expense			28.45	
Office Expense			850.09	
Plumbers' Bonds			20.00	
Increase Rate Case (20%)			2,894.55	
Taxes: Pipe Line, W. Va.		5,796.59		
Special Excise, W. Va.		117.64		
Public Service W. Va.		38.25		
Capital Stock		240.00		
" " U. S.		218.00		
Income " "		1,637.49		
			8,047.97	
				47,048.93
				$68,740.01
Depreciation				7,136.29
				$61,603.72
Dividend 6% on $312,000				18,720.00
Credit Balance 12-31-19				$42,883.72

Profit and Loss Account, December 31, 1920.

Credit Balance January 1, 1920				$42,883.72
Gross Earnings:				
Water Rents			$77,813.53	
Interest			1,169.97	
Turning on Fees			110.50	
Sale Concrete Block Machine			50.00	
Rent Bailey Farm			49.00	
Freight previously paid returned			26.88	
Water Rents previously charged off			3.17	
Meter Tests			.75	
				79,223.80
				$122,107.52
Debit:	M. & S.	Labor.		
Pipe Line	$282.05	4,251.60	4,533.65	
Ada Pump	1,255.43	160.85	1,416.28	
Service Pipes	462.41	757.78	1,220.19	
Springs	3.05	301.50	304.55	
Meters	350.53	520.00	870.53	
		5,691.72		
Tanks	163.76	.....	163.76	
Auto Truck	577.08	.....	577.08	

Sterilization of Water	485.13	.....	485.13	
Coal	8,321.09	.....	8,321.09	
Water Purchased	8,951.54	.....	8,951.54	
Engineers & Firemen	.....	5,634.21	5,634.21	
Reading Meters	.....	544.19	544.19	
Inspection of Pipe Line	.....	500.48	500.48	
Meter Inspection & Sealing	89.24	499.84	589.08	
Salaries Philadelphia			4,800.00	
Salaries Bluefield			6,963.45	
Traveling Expense			222.30	
Legal Expense			669.40	
Office Expense			1,343.73	
Workmen's Compensation Fund			198.94	
Charity			100.00	
Insurance			279.15	
Rent Philadelphia			400.00	
Rent through N. & W. Tracks			10.00	
Taxes			9,059.02	
Increase Rate Case (20%)			2,910.74	
				61,068.49
				$61,039.03
Depreciation				7,224.54
				$53,814.49
Dividend 3% on $312,000				9,360.00
Credit Balance 12-31-1920				$44,454.49

1612*a* *Supplement to the Inventory of the Bluefield Water Works and Improvement Co. Covering Construction from Jan. 1, 1915, to July 1, 1920.*

November, 1920.

Alvord & Burdick,

Hydraulic and Sanitary Engineers,

Hartford Building,

Chicago.

1612*b* *Supplement to the Inventory of the Bluefield Water Works and Improvement Co. Covering Construction from Jan. 1, 1915, to July 1, 1920.*

November, 1920.

Alvord & Burdick,

Engineers,

Chicago.

1613 *Supplement to the Inventory of the Properties of the Bluefield Water Works and Improvement Company Made as of January 1, 1915.*

The supplement covers the changes in the property of the Bluefield Water Works and Improvement Company which were made between January 1, 1915 and July 1, 1920. The various items of plant are given the same number as in the original inventory but carry as well the sub-designations (*a*).

All changes except those due to normal depreciation are noted herein including both deductions from and additions to the 1915 lists. Only those items in which changes occurred are discussed separately. No changes have been made in the following items since the 1915 inventory.

Item No. 1—Preliminary Cost.
" " 3—Gravity Springs.
" " 4—Ada "
" " 5—Jarrell "
" " 6—Beaver Pond "
" " 7—Reservoir and Dam.
" " 8—Pipe line from Gravity Springs to City.
" " 9—Pipe line from Ada Springs to City.
" " 11—Ada Station Building.
" " 12—Steel Stack.

Item No. 13—Coal Chute.
" " 14—Oil House.
" " 15—Worthington Pump.
" " 16—Snow Pump.
" " 17—Auxiliaries.
" " 18—Boiler Plant.
" " 19—Station Piping.
" " 20— " yard "
" " 21—Concrete Retaining Wall.
" " 22—Station Yard Improvements.

1614

Item No. 47—Twin Tanks.
" " 48—Bland St. Tanks.
" " 49—Electric Transmission Line.
General inventory and overhead items.

Item No. 10 (*a*). Pipe Line from Beaver Pond Spring to City.

When the Bailey Springs were purchased and the Bailey Station built in 1916 the pipe line from Beaver Pond to East River St. was taken up and the pipe used in laying a gravity line from the Beaver Pond Spring to the reservoir at the Bailey station and in the force main from the Bailey station to a connection with the original main in East River Street. All of the pipe line covered by Item 10 in the original inventory is therefore removed now, and is listed elsewhere herein.

Item No. 23 (*a*). Ada Station Miscellaneous.

This item remains as it was in the original inventory except for the addition of the following instruments:

1 10" x 6" Builder's Iron Foundry Venturi meter tube complete with piping and a type M indicating recording instrument.
2 Electro Bleaching Gas Co. manual control chlorinators each complete with necessary piping, etc. capacity 3 lbs. per 24 hours.
1 Wallace Tiernan chlorinator same capacity as above.
1 600# platform scale.

Item No. 24 (*a*). Beaver Pond Station Building.

The building at Beaver Pond is the same as in 1915. However, the equipment has all been removed and the building is not used at present. It is planned to convert it into a dwelling for the
1615 Bailey Springs Station operator.

Items No. 25 to No. 31, Inclusive, of 1915 Inventory.

These items covered the equipment in the Beaver Pond Station, all of which has been removed and is no longer a part of the property.

Item No. 32 (*a*). Cast Iron Street Mains.

Cast iron pipe added since 1915:

337.980 tons of 6" and larger pipe.
24.03 " " 3" and 4" "

All pipe conformed to Class "B" American Water Works Association standard except 1,214' of 60#—10" pipe relaid from the Beaver Pond line.

Item No. 33 (*a*). Cast Iron Specials.

Taken at 2% of pipe weight added since the 1915 inventory. 14480# of C. I. Specials 3" to 10".

Item No. 34 (*a*). Laying Cast Iron Mains.

Ordinary trenching including excavation laying, lead, yarn and backfill. All pipes laid with 2½' cover.
Net quantities added since 1915:

5,077 lin. ft. of 10" pipe.
*45 " " " 8" "
10,651 " " " 6" "
1,685 " " " 4" "
710 " " " 3" "

1616 Item No. 35 (*a*). Galvanized Iron Mains.

Quantities added since January, 1915, over and above quantities removed or superseded by cast iron mains:

1,030 lin. ft. of ½" galvanized iron mains.
2,105 " " " ¾" " " "
2,147 " " " ¾" black " "
6,162 " " " 1" galvanized " "
3,368 " " " 1" black " "
11,955 " " " 1¼" galvanized " "
1,103 " " " 1½" " " "

Item No. 36 (*a*). Laying Galvanized and Black W. I. Mains.

Average depth of trench is 2 feet.

1,030 lin. ft. of ½" pipe.
4,252 " " " ¾" "
9,530 " " " 1" "
11,955 " " " 1¼" "
1,103 " " " 1½" "

*Deduction from 1915.

Item No. 37 (*a*). Extra for Unusual Excavation.

The following amounts of difficult excavation were encountered in the work done from 1915 to 1920:

Rock Trenches:

537 cu. yds. of solid rock excavation.

Wet Trenches:

2,950 lin. ft. of trenches where pumping was required.

Item No. 38 (*a*). Steam Railroad Crossings.

But one railroad crossing has been made since the 1915 inventory as follows:

1617 Bramwell road crossing:

At Bramwell Road the 6" pipe passes under the Norfolk and Western R. R. tracks through a stone culvert the width of which varies from 11' 6" to 15' 5" and which has a length of 192½'. The culvert is paved with a 6" concrete floor which had to be cut through and replaced.

The work was difficult and expensive on account of the fact that the culvert is used as a roadway which is much traveled. The pipe is laid about 18" under the floor and about 12" from a sanitary sewer. Water flowed through the culvert during construction, although much of the normal flow was diverted to the sanitary sewer temporarily.

Item No. 39 (*a*). Street Railroad Crossings.

Crossings under street railroad tracks made since the 1915 inventory.

7 tracks crossed by cast iron mains at approximately right angles.

Item No. 41 (*a*). Valves on Mains.

Added since 1915 inventory.

4	10"	gate	valves.
1	8"	"	"
24	6"	"	"
3	4"	"	"
1	3"	"	"

Total 33 valves added.

Item No. 42 (*a*). Valve Boxes on Mains.

(*b*). Cast Iron Valve Boxes.

33 C. I. valve boxes weighing 58# each.

1618 Item No. 43 (*a*). Fire Hydrants.

Nine 6" Corey Hydrants have been purchased by the City and installed since 1915. The Water Company has not purchased any additional hydrants.

Item No. 44 (*a*). Services and Fittings.

Lead services were laid until about the middle of 1916 since which time galvanized iron has been generally used. The Water Company has furnished all materials, labor, etc., for services since July, 1915.

Services added since 1915 inventory:

1	6"	service.
1	3"	"
1	2"	"
2	1"	"
2	¾"	"
538	½"	"

Total, 545 services added since 1915 Inventory.*

Item No. 45 (*a*). Meters.

The Water Company has been rapidly adding to the number of meters until now (July, 1920) the services are nearly 90% metered. The following meters are in addition to those listed in the 1915 inventory:

1	2"	Trident Compound.
1	1"	" "
350	⅝"	" "
2	1"	Nash.
562	⅝"	Lambert.
1	2"	Crown.
1	1"	"
1	1"	Keystone.
3	⅝"	"
9	⅝"	Niagara.
1	⅝"	Hersey Disc.
25	⅝"	Empire.
1	⅝"	Gamon.

*Total services July 1, 1920 = 2,779.

1619 The following meters have been taken out:

1 5/8" Crown.
1 5/8" Standard.

Total number of meters added = 956.
" " " " in use July 1, 1920 = 2,423.

Item No. 46 (*a*). Meter Boxes and Vaults.

Added since the 1915 inventory:

956 boxes consisting of one joint of 18" vitrified tile pipe with no bell and a cast iron cover and ring. Weight of the iron cover and ring 65 lbs.

Item No. 51.

Addressograph—3,500 name capacity.
2 Bristol recording gages 8"—24 hr. charts.

1 Pressure range from 0 to 150#.
1 " " " 0 to 100#.

Solid Mahogany Cashier's desk.

13' 4" long, 7' high with drawers.
8' 8" fence.
Wainscot 15' x 3' 6".

Adjustable drafting table 8' x 4'—iron screw stands.

1620 Property of the Bluefield Valley Waterworks Company.

The Bluefield Valley Waterworks Company was incorporated in 1913 to build the Bailey Spring Pumping Station and spring houses. The property now includes Bailey Springs #1 and #2, the pumping station and equipment, receiving reservoir, and the 10" gravity line from Beaver Pond to the reservoir.

The Pumping Station.

The pumping station is of brick walls with concrete foundations and floor and tile roof on wood sheathing. The building is 20'-0" x 19'-6" in interior dimensions with walls 14½ ft. to eaves. Roof sheathing is laid over 4" x 8" dressed rafters which are supported on one steel rod and timber truss at the center of the building and the building walls.

Quantities:

12 cu. yds. excavation.
29½ " " concrete foundations for bldg. and pump.
390 sq. ft. of 6" concrete floor.
36,600 brick in lime and cement mortar (wall count).
2800' B. M. dressed lumber in roof.
210# steel bolts in trusses.
12.2 squares tile roof.
2 double doors—7'-9" x 8'-10" x 2½" with semi-circular transom.
5 windows—24 light—8' x 5' with semi-circular top.
171 sq. yds. plaster on lath.

1621 The Reservoir.

The reservoir is trapezoidal in shape. It is built in limestone excavation. All walls are of plain concrete 12" thick and floors plain concrete 6" thick. The roof is supported on two arched cross walls dividing it into four parts each approximately 12' square. The roof is 6" thick reinforced both ways with ⅝" round rods @ 12" c. to c. & woven wire.

Quantities:

176 cu. yds. rock excavation.
44 " " earth "
11 " " concrete in floor.
40 " " " " walls.
11 " " " " roof.
600# steel bars.
65# C. I. in manhole cover.
600 sq. ft. woven wire reinforcing.
4 sq. ft. of W. I. screen grating.

Bailey Spring No. 1.

The development at this spring consisted in removing the rock and other debris from the spring which was formerly used for tanning purposes and refilling it with large rock after which it was entirely enclosed by a concrete wall and slab cover. A concrete spring house at one edge of the spring covers the upper end of the pipe leading from the spring to the reservoir. The flow to the reservoir is by gravity.

Quantities:

Cleaning out space 700 sq. ft. from 1′ to 4′ deep.
Refilling with rock approx. 25 cu. yds.
25 cu. yds. concrete in walls and top.
3 " " of concrete in spring house.
1 C. I. door 18′ x 24″.
1 Yale padlock.
1 Overflow door—steel 6′ x 2′ x ⅛″.
2,640# 4″ C. I. pipe.
1622 379# 4″ C. I. Specials.
1 4″ Hub gate valve.
Laying 124′ of 4″ C. I. pipe in 2′ rock trench.

Bailey Spring No. 2.

This spring is about 150 feet distant from the reservoir to which it is connected by an 8″ C. I. pipe. The flow from this spring is relatively large for springs in this vicinity. The flow all appears at the surface of a small area.

Quantities:

4½ cu. yds. concrete in spring house.
1 C. I. door 18″ x 24″.
1 Yale padlock.
3 cu. yds. concrete in spring protection.
11,640# of 8″ C. I. pipe.
5,256# of 10″ " "
145# " 8″ " Specials.
1 8″ Hub gate valve.
Laying 124′ of 8″ C. I. pipe in 2′ rock trench.

Station Equipment.

The pumping equipment consists of a Deane of Holyoke 9″ x 12″ triplex pump mounted on common bedplate with, and driven through gearing, by a 75 H. P. 600 R. P. M. 3 phase, 60 cycle, 220 volt B. E. motor. The installation includes automatic float controlled starter, pressure relief valve, air chamber charging equipment, Venturi meter, etc.

Quantities:

1 9″ x 12″ Deane Triplex pump and 75 H. P. 600 R. P. M., 220 v., 3 phase, 60 cycle, G. E. motor installed.
1 Float controlled automatic starter installed.
1 6″ x 3″ Venturi meter and register recorder.
1 Electro Bleaching Gas Co. chlorinator, capacity 2 oz. per hour.
1 600# platform scales.
1 C. I. stove.

1623 Piping:

2 10″ Hub gate valves.
1 6″ extra heavy check valve.
1 6″ " " gate " (fl.).
1 6″ x 6″ x 2″ fl. tee.
1 3″ Lunkenheimer 225# relief valve.
1 3″ to 4″ reducing screw elbow.
1 4″ screw nipple.
1 pr. 4″ companion flanges.
15′ of 4″ screw pipe.
1 4″ screw ell.
2 ¾″ brass globe valves.
2 ¾″ vertical brass check valves.
2 ¾″ horiz. " " "
1 1″ globe valve.
1 Air charging tube 2″ x 24″ with water glass.
10′ of ¾″ W. I. pipe.
4014# C. I. H. & S. specials.
1 6″ E. H. fl. ⅛ bend.
1 6″ " fl. ell.
2 8″ " " "
3 8″ stand " "
1 8″ fl. check valve.
1 8″ foot valve & strainer.
1 10″ N. P. 300# gage.
1 10″ " 15″ vac. & 25# Pr. gage.

Station Miscellaneous.

1,120 ft. of woven wire fencing on locust posts.

Pipe Lines Outside of Bluefield City Limits.

186,600# of 10″ H. & S. 56# & 60# pipe.
Laying 3,226 lin. ft. of 10″ H. & S. pipe.
350 lin. ft. of rock trench.

Land at Bailey Springs.

The Water Company acquired 1.92 acres of land at Bailey Springs including the two springs at a cost of $5,000. The tract is irregular in shape so as to include both springs.

EXHIBIT No. 58 (*a*).

1624 *Itemized List of Street Mains Laid 1915 to 1920.*

10" Cast Iron Mains in City of Bluefield:

On—	From—	To—	Length.
Adams St.	Bailey St.	Golf Ave.	1,464 ft.
" "	Golf Ave.	Copley Ave.	1,628 "
" "	Walton Ave.	River Ave.	1,745 "
Augusta St.	Copley Ave.	Walton Ave.	1,260 "
Copley Ave.	Adams St.	Augusta St.	320 "
E. River Ave.	Adams St.	Northerly	221 "
Walton "	Lebanon St.	"	215 "
" "	Adams St.	Augusta St.	366 "
Total 10" mains laid in City			7,219 "

10" C. I. Mains Laid Outside of Bluefield:

Private R. of W.	Beaver Pond	Bailey Spring	1,056 "
Bailey Springs Sta.			1,430 "
" "		Adams St.	740 "
Total 10" C. I. Mains laid outside of City			3,226 "

Itemized List of Street Mains Laid 1915 to 1920.—Continued.

10″ C. I. Mains Removed 1915 to 1920:

On—	From—	To—	Length.
Private R. of W.....	Beaver Pond.....	Walton Ave.....	3,440 ft.
"	Walton Ave.....	E. River Ave.....	2,142 "
Total 10″ Mains taken up.....			5,582 "

Summary of 10″ Mains.

	In Bluefield.	Beaver Pond.	Ada.	Bluefield Valley W. Co.
10″ Mains in use 1915.....	15,350	3,440	21,570	0
" " added since 1915.....	7,219	0	0	3,226
	22,469	3,440	21,570	3,226
" " taken up " "	2,142	3,440	0	0
" " in service July 1, 1920.....	20,427	0	21,570	3,226

Bluefield Valley Water Co., 1,740′ @ 56#/ft.=	97,440		
1,486′ @ 60#/ft.=	89,160		
		186,600	
City of Bluefield, 214′ @ 60 #/ft.=	12,840		
7,005′ @ 63.8#/ft.=	446,919		
		459,759	
		646,359	

Deduct 1,740′ @ 56 #/ft. =	97,440	
1,700′ @ 60 #/ft. =	102,000	
2,142′ @ 63.8#/ft. =	136,660	
	336,100#	336,100
Net Weight of 10″ Added		310,259 lbs.

1625 6″ C. I. Mains:

On—	From—	To—	Length.
Bluefield Ave.	Beech St.	Cypress St.	4,156 ft.
"	Cypress St.	Graves St.	754 "
Bramwell Rd.	Bluefield Ave.	South St.	955 "
Bay St.			340 "
Bramwell Rd.	South St.	Northerly	1,834 "
Graves St.	Bluefield Ave.	Walters Ave.	118 "
Oakhurst Ave.	Bland St.	Ledge St.	575 "
Preston St.	" "	Easterly	432 "
Union St.	Forest St.	Westerly	500 "
Washington St.	Bay St.	Albemarle St.	422 "
Walton Ave.	Lebanon St.	Adams St.	565 "
Total lin. ft. of 6″ C. I. Mains Added			10,651 "

Summary of 10″ *Mains.*—Continued.

4″ C. I. Mains:

On—	From—	To—	Length.
Cumberland Rd.	Horry St.	Easterly	80 ft.
Pine St.	Bluefield Ave.	Northerly	60 "
Walters Ave.	In Grahamfield.		1,245 "
Hale St.	Walters Ave.	Southerly	150 "
Graves St.	" "	"	150 "
Total lin. ft. of 4″ C. I. Mains Added			1,685 "

3″ C. I. Mains:

Cumberland Rd.	Horry St.	Easterly	500 "
Pine St.	Bluefield Ave.	Northerly	210 "
Total lin. ft. of 3″ C. I. Mains Added			710 "

1626 1½″ Galvanized Iron Mains:

Bland St.	Shady Ave.	Lakeside Ave.	898 ft.
Bramwell Rd.	N. & W. R. R.	South St.	300 "
Hill Ave.	Couch St.	Westerly	166 "
North St.	Augusta St.	Northerly	350 "
Nelson St.	Norfolk St.	"	126 "
Pearl St.	Clinton Ave.	Easterly	63 "
Poplar St.	Carolina "	Northerly	360 "
Rockbridge St.	E. River Ave.	Wythe Ave.	108 "
Union St.	Forrest St.	Easterly	127 "

Willow St.	Bluefield Ave.	Carolina Ave.	20 "
Alley of Walters Av.	Hale St.	Williamson St.	460 "
Hale St.	S. of Walters Ave.		175 "
Total lin. ft. of 1½" C. I. Mains Added			3,153 "

1¼" Galvanized Iron Mains:

Albermarle St.	Wythe Ave.	Easterly	255 "
Augusta St.	North St.	Westerly	450 "
Alley between Augusta & Melrose Sts.			200 "
Cumberland Rd.	Roosevelt St.	Easterly	648 "
Ferndell Ave.	Adams St.	Frederick St.	1,130 "
Greenbrier St.	Lincoln St.		216 "
Graham Road	Brammel Rd.	Westerly	207 "
Green St.	Franklin St.	Princeton Ave.	330 "
Frederick St.	Ferndale Ave.	Easterly	160 "
Jefferson St.	Bay St.	Fairmont St.	1,188 "
Lebanon St.	Reid Ave.	Walton Ave.	1,110 "
Melrose St.	E. River Ave.	Westerly	373 "
Maryland Ave.	Augusta St.	Montclair St.	370 "
Montclair St.	Maryland Ave.	Westerly	170 "
Norfolk St.	Nelson St.	Putnam St.	208 "
Washington St.	Fairmont St.	Northerly	126 "
White Sulphur Av.	Adams St.	Fair Grounds	1,441 "
Lynn and Highland Ave.			510 "
Alley S. of Bluefield Ave.			3,295 "
Total lin. ft. of 1¼" C. I. Mains Added			12,387 "

Summary of 10" Mains.—Continued.

1" Galvanized Iron Mains:

On—	From—	To—	Length.
Adams St.	Maryland Ave.	Westerly	350 ft.
Bland St.	Cumberland Rd.	Northerly	287 "
Cumberland Rd.			6 "
"	Bland Blvd.		170 "
"	Toledo St.		110 "
Copley Ave.	Adams St.		60 "
Dearborn Ave.	Albemarle St.	Adams St.	312 "
Franklin St.	Green St.	Westerly	90 "
Jones St.	E. of Alley		398 "
Maryland Ave.	Adams St.	Augusta St.	370 "
Poplar St.	Highland Ave.	Northerly	130 "
Pen Maur Ave.	View Ave.	"	687 "
Pearl St.	Clinton Ave.	Easterly	337 "
Princeton Ave.	Clay St.	Jackson St.	369 "
Reid Ave.	Liberty St.	Lebanon St.	320 "
1627			
Rockbridge St.	E. of Clinton Ave.		20 ft.
Shenandoah St.	Clinton Ave.	E. River Ave.	280 "
View Ave. & Alley	E. of View Ave.	Spring St.	1,700 "
Vineyard St.	Adams St.	South St.	526 "
Washington St.	Elwood St.	Bay St.	360 "
*Private R. of W.	Beaver Pond Springs	Walton Ave.	3,368 "
Total 1" G. I. Mains			10,250 "

Total 1" G. I. Mains ..... 10,250 "

¾" Galvanized Iron Mains:

Aliff St.	W. of Woodrow St.		103 ft.
"	E. " " "		70 "
Forrest St.	S. of Union St.		210 "
Hill Ave.	Couch St.	W. of Southerly	640 "
Jefferson St.	S. of Adams St.		80 "
"	Fairmont St.	Southerly	390 "
Pendleton Terrace	W. Ridge St.	Westerly	413 "
Union St.	E. of Forrest St.		40 "
Woodrow St.	S. of Aliff St.		180 "
Washington St.	N. of Elwood St.		200 "
*Private R. of W.	Walton Ave.	E. River Ave.	2,147 "
Total lin. ft. of ¾" pipe Added			4,473 "

½" Galvanized Iron Mains:

Jones St.			452 "
Stowers St.	W. of Jefferson Ave.		123 "
Washington St.	Elwood St.	Bay St.	435 "
Walnut St.	Carolina Ave.		20 "
Total lin. ft. of ½" G. I. pipe Added			1,030 "

*Black Pipe.

1628 Item 2 A. Real Estate and Rights-of-Way.

Three additional parcels of real estate and one right-of-way have been purchased since 1915, as follows:

Under deed dated May 13, 1916, 56.15 acres at Honaker Mill were purchased from W. D. Calfee et al. at a cost of $386.90.

Under deed date Feb. 20, 1917, a right-of-way across the Sublett Tract was purchased from S. A. Mullin, et ex. for a consideration of $101.25.

Under deed dated August 3, 1918, Lot 3 in Section No. 22 was purchased from C. B. Whitlow for a consideration of $3,500.00, which, with fencing, makes the total cost of this property $3,524.94.

Under deed dated April 30, 1920, there was purchased from John Gear, et ex., et al., 5.196 acres at a cost of $700.00. Including the cost of Brief, the property has required an expenditure of $760.00.

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1629a *Report upon the Value of the Water Works Properties of the Bluefield Water Works & Improvement Co. as of July 1, 1920.*

Alvord & Burdick,

Hydraulic and Sanitary Engineers,

Hardford Building,

Chicago.

1629b *Report upon the Value of the Water Works Properties of the Bluefield Water Works & Improvement Co. as of July 1, 1920.*

Alvord & Burdick,

Engineers,

Chicago.

1630 Mr. William McCarthy,
Supt., Bluefield Water Works & Improvement Co.,
Bluefield, W. Va.

DEAR SIR:

We have been asked by you to give our opinion as to the present value of the water works property of the Bluefield Water Works & Improvement Co., and herewith present our conclusion, together with an explanation of some matters which we believe are necessitated by the present unsettled economic conditions.

This is an admittedly difficult time to value property. The world has been through a remarkable economic upheaval and social overturn as a result of the world war. All of the data and conclusions which were valid prior to the war, and were based on conditions where serious and sudden economic changes were not evident, are now ancient history. No valuation of public utility property made prior to the war is now of any value except as a reminiscence.

It has always been our earnest contention that past cost, unless very recent past cost, was of small usefulness in determining present and future values. It has also been our constant contention that reproduction cost was not necessarily an indication of present and future values unless certain underlying and fundamental conditions were present.

These fundamental conditions are:

1st. That the service which the utility plant supplies can in the future be best and most usefully supplied by the plant in
1631 question and its natural enlargement, and that there is no other, better, and more economical way to obtain the service.

2nd. That the cost of the service to the consumer will be reasonable; that is to say that he will obtain it at a cost lower than he can individually obtain it by any other method.

3rd. That the created property is in a progressive and growing community, or at least not in a community likely to be seriously menaced by declining population in industry.

4th. That the prices on which reproduction or rebuilding are figured are such as to cover future changes so far as they can be reasonably predicted.

When these four fundamentals have been carefully considered and found to be present we are warranted in assuming that the reproduction method, or cost of rebuilding in the near future, gives a reasonable basis for predicting future value. Even then, it should not be used thoughtlessly and empirically. Many things should be considered such as the stability of the arts and invention in that particular utility, the stability of industry in the population center, its probable growth, its economic and financial character, its industrial outlook, and the wisdom and good management shown in the upbuilding of the plant and business of the utility; all of which, however, is subordinate to the question, "Will the service rendered be needed by the population for a reasonable period in the future?"

This last fundamental fact underlies all others, and is really
1632 the foundation of all conclusions as to value.

We define value as the measure of the relation of human needs to their source of supply, usually measured in money. Intrinsic value is the true theoretical determination of such a relation, a conclusion which, however, earnestly we seek, we probably never fully and completely find. Market value is the approximation of intrinsic value necessitated by the handicap of quick determination without the opportunity or ability to completely analyze all the factors making for the determination of intrinsic value.

In public utility valuation it is the intrinsic value that we obviously seek to know.

Inasmuch as human needs and their source of supply are always in a state of flux, value itself, even intrinsic value, is always in a state of flux and is not a steady, stable, or normal thing, and if this is true of intrinsic value, it is still more true of market value, which is only the rapid attempt to approximate intrinsic value.

Value, then, is a fluctuating thing, and may be likened somewhat to the tides of the sea, due to constant changes in an endeavor to find the balance for normal conditions, and it has, in addition to the tide, its waves likewise, due to ephemeral and transient conditions and to the human inability to completely analyze fundamental conditions or foresee the near future. Unlike the tides, however, it has been clearly shown that there is no mean or constant average about which value fluctuates. Prices over hundreds of years show no average of this kind, but apparently move about some un-
1633 known and fluctuating base, which itself is dependent upon the progress of civilization, invention, discovery, and economic struggle (See Elmes' diagrams: Ill. Gas Association, March 20, 1919).

One of the fundamental facts about value which has not been

clearly understood, is that in public utility work valuation, and, in fact, in all valuation, the value which we seek must necessarily be the value of the coming future, and to determine which we must be more or less forecasters and prophets. Nothing has value entirely predicated upon the past. Even a relic has value, chiefly because of the possibility of its future display and the future interest, sentiment, and wonder which it will excite due to its history. If this is true, therefore, of a relic, it is certainly true of all material things with which we deal and upon which we are trying to place a value. We do not value our house or our farm or our stocks or our bonds, because they have produced comfort, convenience, and income in the past, but we value them, and a purchaser values them, almost wholly on the hope that they will continue to produce such comfort, convenience, and income in the future, and our ideas of their value fluctuate entirely as our hopes of their future income, comfort, and convenience seem to be well founded, or are found to be illusory.

It is particularly true, therefore, in the making of rates by Public Utility Commissions, and the valuation for sale of public utility properties that the future usefulness to the community is the vital thing we must consider, and that our attention must be directed to finding what the human needs of the future are going to be,
1634 and how well fitted the property is in its ability to supply such needs.

Valuation, then, is a forecast of future usefulness of a public utility property to the community in which it is located, and this future usefulness must be predicated on the conditions of the future rather than the conditions of the present. If we know prices are going to continue to rise, and rebuilding is going to cost more and more for a long time to come, and we know that there is no other way to get service at less cost, and we further are convinced that the service is going to be needed, then we must place a greater intrinsic value upon a public utility property than it has at present. On the other hand, if we know that some other and less costly method is imminently ready to supply the service, and that such method will do away with much which we have already created, then we must face the hard and discouraging fact that the property will not be worth as much in the future as it is at the present time, or perhaps has been in the past.

These fundamental reasons are the reasons why it is so difficult for us all to get together on the question of valuation. As a matter-of-fact, we are always, without knowing it, endeavoring to be prophets, and prophecy is no mean task. Successful prophecy is predicated upon a wide outlook, combined with a complete knowledge of all the working conditions of human relations, trend of prices, and history, and the true valuer has got to be a forecaster whether he likes it or not. Engineers are popularly supposed to be mathematicians, and the public suppose they find exact re-
1635 sults from a skillful use of figures. This is far from being true. Engineers in their practical work in life are scientific forecasters, and in so far as they are able and reliable students of the conditions surrounding their forecasts, their forecasts become more

complete and valuable. The engineer must forecast his plan in design and construction to meet the needs of his problem, which is always a future problem; he must forecast his costs; he must forecast his operating expenses and his methods of building, and he must forecase every step of the construction program. Engineering valuators must forecast likewise the future value of the property which they are valuing, and its probable future rates and the future conditions which will surround it.

Engineering Commission valuers, and their staffs as well, must be forecasters and prophets as to future conditions, and their work is a success or failure in so far as they have predicated the future successfully, or have failed to appreciate coming changes, the premonitory symptoms of which are usually visible in the engineering, financial, and economic world.

It is admittedly an unusually difficult time in which to make forecasts. Some of the following facts are put forth here to show the abnormal conditions which confront this country in the next five or ten years in its internal economic and industrial relations:

1st. About 20 million men have either been completely or partially put out of effective earning power in Europe today.

1636 2nd. Probably over 200 billions of dollars of capital has been uselessly sunk in war, almost, if not wholly, bankrupting all important financial resources of the old world.

3rd. The reduction of morale, the lack of efficiency in industry, the inability for adaptation to the new conditions, lack of capital, raw material and lowered efficiency of labor, both skilled and unskilled, will continue to keep production at a low mark, especially in Europe, for a long time to come.

4th. Efficiency of labor in this country, both skilled and unskilled, has been materially lowered by the unexpected prosperity during the war, and the unrest caused by the sudden stoppage of reckless expenditures since the war, and the present high cost of living.

5th. Emmigration into this country has been practically stopped for over four years, materially reducing the labor resources of this coutry in their normal growth.

6th. The country, as a whole, is about four years behindhand in housing and the extension of needed public utility property.

7th. The cost of all labor has advanced from 60% to 80% since before the war.

8th. The cost of materials is often double that of the average of pre-war costs.

9th. Operating expenses of water works rose about 50% during the war (See Metcalf, American W. W. Ass'n, Nov., 1919).

1637 10th. Annual revenues, even with all the increases granted by Commissions, have only increased about 21%, which is no more than they would have increased had there been no war and no increases. (Ibed).

11th. The net operating income of waterworks applicable to depreciation, interest, dividends, and surplus, has stood substantially the same since 1915 (same authority).

12th. Reserve stocks of all kinds for the supply of this country have been drawn down by the war and the enormous demand from foreign countries during and since the war.

To these facts we may add certain forecasts which we can safely assume will obtain, granting that certain fundamental changes in conditions on which they are predicated take place:

1st. The high prices will obviously stay high, and perhaps become higher until the productive activity of this country overtakes our consuming power.

2nd. When production overtakes consumption, stationary and finally declining prices must ensue.

3rd. If prices decline very rapidly after such a peak period, a panic may result because on a falling market everybody will be anxious to convert existing stocks into money.

4th. If, after production overtakes consumption, prices decline slowly, it will be in the main because producing power does not much exceed the consuming power of the public, or of the
1638 people at large.

5th. Any future contraction of the currency and of bonds and like credits, now greatly inflated, will also cause prices to decline in time. These influences are more or less under Government regulation through Congress, the Treasury, and the Federal Reserve Banks, but they can only be guided and not fully controlled.

6th. If we have careful regulation by these Governmental agencies and no extensive expansion of production, prices will probably slowly decline from their present high level.

7th. But if we have more war, increase of unsettled conditions, financial panics, revolutionary upheaval, continued unrest, and low morale, prices will not only stay high but will inevitably go higher.

8th. There is some question as to whether Europe is not already bankrupted. This has been indicated recently by exchange rates. If these rates continue as at present to prohibit largely International trade and commerce, then European purchasing power in this country will be kept low, and in this country production will more rapidly overtake consumption, and declining prices will surely ensue.

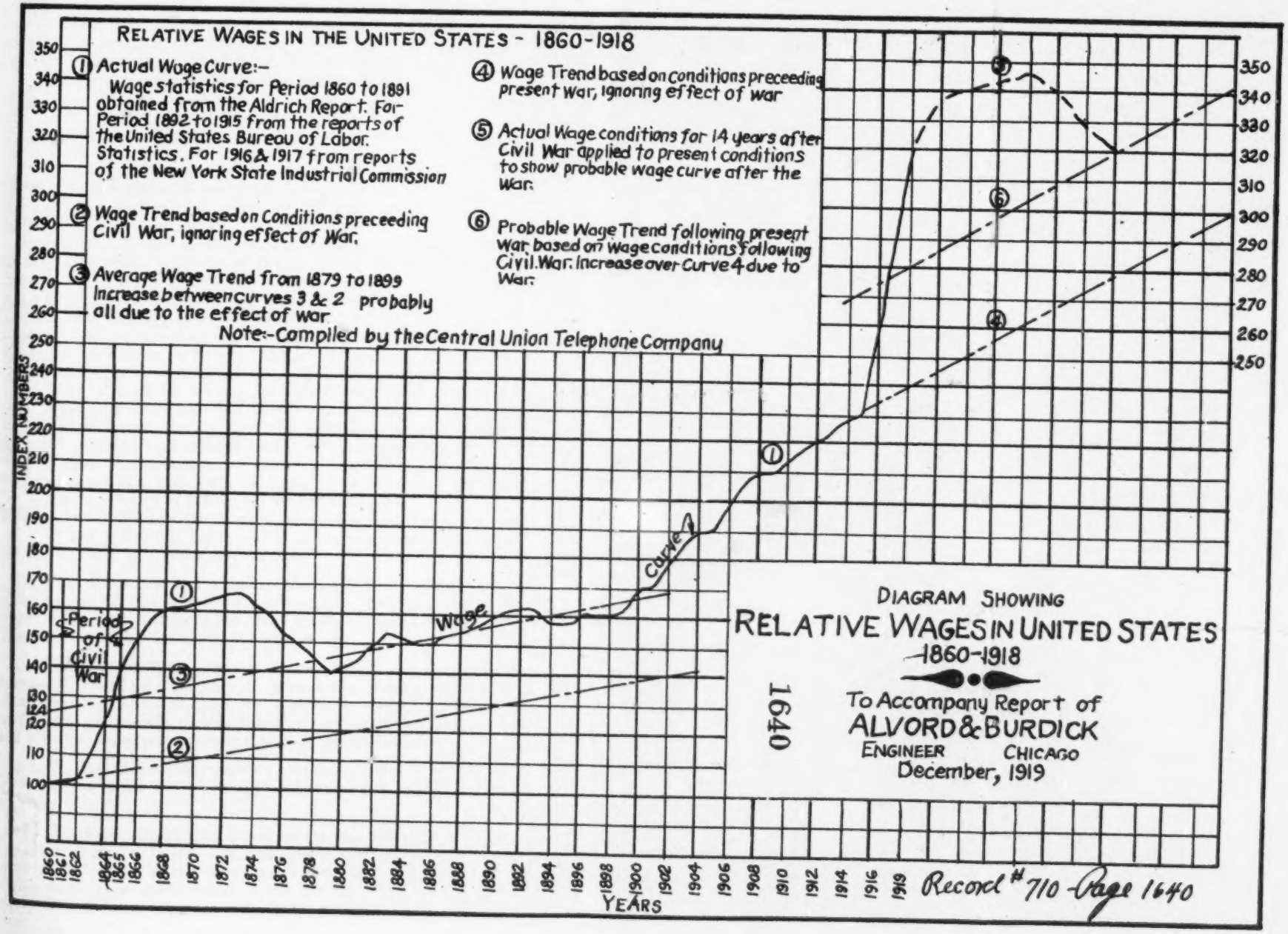
9th. If, on the other hand, peace is soon concluded and European nations are extended credits and the present high exchange rate

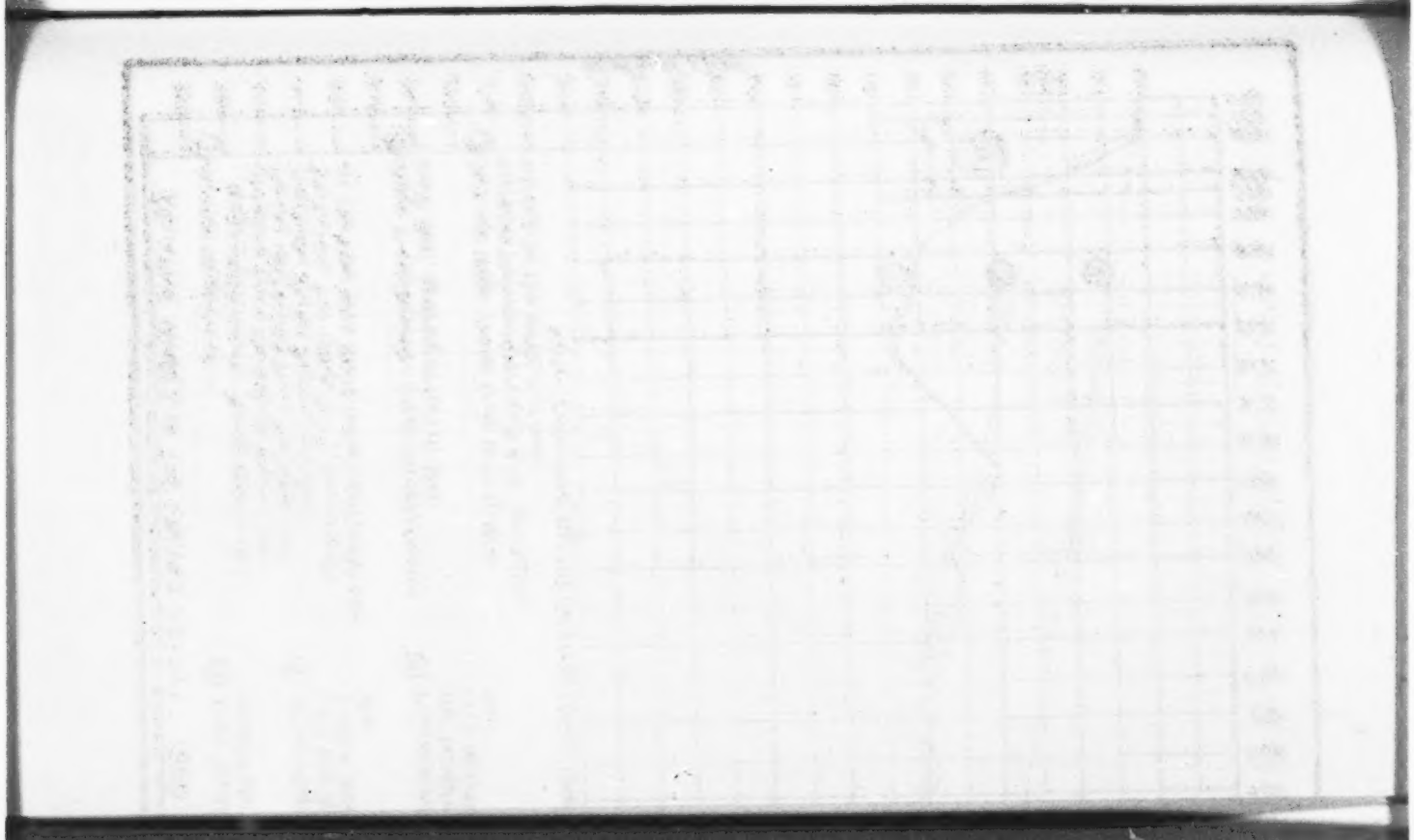
barrier is overcome, production will take a much longer time to overtake consumption in this country because of the demand from abroad, and prices will necessarily remain high for a considerable period.

1639 Applying all this reasoning to the question of valuing a utility at the present time, we find ourselves under the necessity of predicting within rather wide limits as to what the probable future course of prices will be, and this is what renders the present responsibility of valuing so difficult.

In order to find some basis which will give us a general clue to the situation, the accompanying diagram of labor prices before the Civil War up to the end of 1918 in this country has been compiled by the Engineering Staff of the Central Union Telephone Company, and presented in some of their recent cases before Utility Commissions. This diagram shows that in both wars—the Civil War and that of the present time—pre-war labor prices mounted very rapidly until they were nearly double what they had been before the war. From that time on, covering a period of 8 to 10 years after the Civil War, they remained high, and then fell rather gradually to a level nearly one-half higher than the pre-war prices, thereafter continuing to rise but very slowly through a long series of years; in fact, it cannot be said that there is any decline, except a relative one, over the whole course of the period under consideration.

(Here follows diagram showing relative wages, 1860-1918, marked page 1640.)


RELATIVE WAGES IN THE UNITED STATES - 1860-1918
① Actual Wage Curve:- Wage statistics for Period 1860 to 1891 obtained from the Aldrich Report. For Period 1892 to 1915 from the reports of the United States Bureau of Labor Statistics. For 1916 & 1917 from reports of the New York State Industrial Commission
② Wage Trend based on Conditions preceeding Civil War, ignoring effect of War.
③ Average Wage Trend from 1879 to 1899 Increase between curves 3 & 2 probably all due to the effect of war
④ Wage Trend based on conditions preceeding present War, ignoring effect of war
⑤ Actual Wage conditions for 14 years after Civil War applied to present conditions to show probable wage curve after the war.
⑥ Probable Wage Trend following present war based on wage conditions following Civil War. Increase over Curve 4 due to War.
Note:-Compiled by the Central Union Telephone Company
INDEX NUMBERS
YEARS
Period of Civil War
Wage
Curve
DIAGRAM SHOWING
RELATIVE WAGES IN UNITED STATES
1860-1918
To Accompany Report of
ALVORD & BURDICK
ENGINEER CHICAGO
December, 1919
1640
Record # 710 Page 1640



It is quite true that there were different influences at work during and after the Civil War than there are at present, particularly in the premium on gold then expressed on the public exchanges. Today, while gold is not at a premium in the markets, it is practically at a premium everywhere, and cannot be obtained from Gov-
1641 ernment and Banks without a good reason being given and then only in a most limited way. In a general way, therefore, we find the diagram substantiates what would be reasonably found to be true, viz. that the destruction of property by the war and the consequent dislocation and readjustment necessary seriously interfere with world wide economic life and industrial activity, and create a long period of high prices, slowly declining but never reaching the former pre-war limit.

Coming now to the more practical question of placing a value on the water works property of the Bluefield Water Works & Improvement Co. for the next five to ten years for the purpose of making proper and adequate rates, we are confronted at once with the fact that reproduction cost loses much of its more exact importance as a measure of value, in the light of these larger influences which we have been reviewing. Reproduction cost will, however, aid us materially if we use it intelligently in seeking intrinsic value. This can be done by taking the reproduction cost as of today's high prices and assuming that prices will not materially increase over those of today, then taking the reproduction cost as of pre-war prices and similarly assume that it will be impossible that prices will ever again reach such a low level. We can thus indicate a zone with maximum and minimum limits in which it is most likely that future prices and future values will fluctuate.

1642 In assuming reproduction, then, we should not lose sight of the following facts, which have been mentioned before, and taking them in their order, we find:

1st. That there can be no reasonable doubt that the future need of the citizens of Bluefield for a water supply, similar to that which is now being provided for them, will continue, and will even grow. This seems to be a reasonably safe prediction.

2nd. We can further assume that there is no way in which the citizens of Bluefield can provide themselves individually with a water supply at any less than the reasonable cost of works, which would have to be built at the prices prevailing in the near future, and with fair rates corresponding to such an investment.

3rd. We find that we may safely presume that the Bluefield Water Works as now built has no serious defects in judgment in its construction.

4th. We are of the opinion, based on the reasoning which we have presented, that the future trend of prices for the construction of water works plants in the next five or ten years, while it may go higher than at present if world unrest increases, will more probably slowly decline from the present high prices until at the end of the

period it will probably reach about half way between present prices and prewar prices.

1643 With this plan of forecast before us, we have made, with our usual care, an investigation of the reproduction cost less depreciation of the Bluefield Water Works & Improvement Co. on the assumption that the prewar conditions were prevalent at the present time, which, of course, is not a fact, and we have assumed that this is the very least and lowest possible amount for which the citizens of Bluefield can in the future provide themselves with water in any world price conditions likely to prevail. The unit prices used for the construction executed both prior and subsequent to 1915 are the same as used in our "Report upon the Value of the Water Works Properties of the Bluefield Water Works and Improvement Co.", bearing the date of Feb. 3, 1916. In computing the accrued depreciation the necessary changes in the age and life of the several items have been made. The summary of this estimate is appended hereto, and amounts to the sum of six hundred twenty-four thousand five hundred and forty-eight dollars ($624,548.00).

In a similar way we have taken present prices without averaging the cost of pipe or any other item, and computed the cost to rebuild the plant and recreate the business of the Bluefield Water Works & Improvement Co., beginning at the present time and completing it in the near future on the basis of present high prices, and a statement of this reproduction cost is appended hereto, which amounts to the sum of one million one hundred ninety-three thousand six hundred and sixty-three dollars ($1,193,663.00).

1644 With this plan of forecast before us, we have made, with our usual care, an investigation of the reproduction cost less depreciation of the Bluefield Water Works & Improvement Co. on the assumption that the prewar conditions were prevalent at the present time, which, of course, is not a fact, and we have assumed that this is the very least and lowest possible amount for which the citizens of Bluefield can in the future provide themselves with water in any world price conditions likely to prevail. The unit prices used for the construction executed both prior and subsequent to 1915 are the same as used in our "Report upon the Value of the Water Works Properties of the Bluefield Water Works and Improvement Co.," bearing the date of Feb. 3, 1916. In computing the accrued depreciation the necessary changes in the age and life of the several items have been made. The summary of this estimate is appended hereto, and amounts to the sum of Five Hundred Ninety-seven Thousand Nine Hundred and Seventy-eight Dollars ($597,978.00).

In a similar way we have taken present prices without averaging the cost of pipe or any other item, and computed the cost to rebuild the plant and recreate the business of the Bluefield Water Works & Improvement Co., beginning at the present time and completing it in the near future on the basis of present high prices, and a statement of this reproduction cost is appended hereto, which amounts to the sum of One Million One Hundred Fifty-five Thousand Three Hundred and Sixty-eight Dollars ($1,155,368.00).

1645 On the general basis of the diagram of prices in this country from the Civil War to the present time, and on the theory which we have before explained, we believe that the fair cost of reproduction for the basis of rates for the near future is certainly not less than midway between the prewar and present day costs of reproduction or in round numbers ($900,000) Nine Hundred Thousand Dollars. We believe this a conservative value upon which to base rates for a future period not exceeding eight or ten years.

If our reasoning in this matter seems not to be predicated upon formula or computed with mathematical accuracy, but rather based upon broad convictions and general study upon which there might be a wide range of opinion, we nevertheless feel that this is the proper method of approach which a broad-minded and experienced financier would most certainly use in arriving at the important question of future value, and we believe that much of the disputation and difference of opinion which has occurred in the past on the subject of valuation could be avoided if it was remembered that valuation is not a routine pricing of quantity lists, but is a problem for the most mature and experienced judgment of men of ripe experience after careful, impartial, and unbiased study of all the surrounding facts and conditions.

1646 Trusting that these few reflections will be of aid to you, and possibly of interest to the Commission in the presentation of your case, we remain

Yours very truly,

ALVORD & BURDICK,
By L. R. HOWSON.

Chicago, Ill., December, 1920.

1647 *Summarized Estimate of the Cost of Reproduction of Bluefield Water Works & Improvement Company's Properties (Prewar Price Basis).*

Item No.	Description.	Cost to reproduce.	Depreciation.	Present worth.
1.	Preliminary Cost	15,350	0	15,350
2.	Real Estate & Rights of Way	33,964	0	33,964
3.	The Gravity Springs	14,645	1,596	13,049
	Water Rights	40,000	0	40,000
4.	The Ada Springs	19,231	4,230	15,001
	Water Rights	7,683	0	7,683
8.	Pipe Line from Gravity Springs to City	22,467	831	21,636
9.	Pipe Line from Ada Springs to City	54,487	2,016	52,471
11.	The Ada Sta. Bldg.	15,052	1,957	13,095
12.	The Steel Stack	2,931	1,046	1,885
13.	Coal Chute	868	114	754
14.	Oil House	168	22	146
15.	Worthington Pump	1,439	484	955
16.	Snow Pump	16,645	3,495	13,150
17.	Auxiliaries	1,049	374	675
18.	Boiler Plant	6,444	2,300	4,144
19.	All piping in station	1,639	585	1,054
20.	Piping in Sta. Yard	1,348	193	1,155
21.	Concrete Retaining Wall	1,295	155	1,140
22.	Sta. Yard Improvements	3,916	470	3,446
23.	Sta. Miscellaneous	1,400	797	603
32.	Cast Iron Street Mains	43,989	1,320	42,669
33.	Cast Iron Specials in Street Mains	1,927	58	1,869
34.	Laying Cast Iron Street Mains	19,579	587	18,992

35.	Galvanized Iron Street Mains	7,676	3,508	4,168
36.	Laying Galvanized Iron Street Mains	7,907	3,613	4,294
37.	Extra for Unusual Excavation	10,263	308	9,955
38.	Steam Railroad Crossing	1,415	42	1,373
39.	Street Railway "	356	11	345
40.	Cutting thru Pavements over Mains	28,685	1,645	27,040
41.	Valves on Mains	3,138	527	2,611
42.	Valve Boxes on Mains	546	92	454
43.	Fire Hydrants	435	73	362
1648				
44.	Services & Fittings	24,395	4,098	20,297
45.	Meters in Service	14,292	3,573	10,719
46.	Meter Boxes & Vaults	7,547	1,268	6,279
47.	Twin Tanks	33,506	14,173	19,333
48.	Bland St. Tank	6,944	3,868	3,076
49.	Electric Transmission Line	653	144	509
50.	Laboratory Equipment	250	0	250
51.	Office Furnishings	1,100	0	1,100
52.	Materials & Supplies	8,100	0	8,100
53.	Engineering & Superintending	25,583	3,038	22,545
54.	Administrative & Legal Costs	10,233	1,215	9,018
55.	General Contingent Costs	20,467	2,431	18,036
56.	Interest during Constr	26,248	3,034	23,214

Summarized Estimate of the Cost of Reproduction.—Continued.

Additions Since 1915.

Item No.	Description.	Cost to reproduce.	Depreciation.	Present worth.
23 (*a*).	Ada Sta. Miscellaneous	2,420	165	2,255
32 (*a*).	Cast Iron Street Mains	9,235	28	9,207
33 (*a*).	Cast Iron Specials in Street Mains	434	1	433
34 (*a*).	Laying Cast Iron Mains	3,917	12	3,905
35 (*a*).	Galvanized Iron Mains	2,386	134	2,252
36 (*a*).	Laying Galvanized Iron Mains	3,034	170	2,864
37 (*a*).	Extra for Unusual Excavation	1,933	9	1,924
38 (*a*).	Steam Railroad Crossings	400	0	400
39 (*a*).	Street Railway Crossings	84	0	84
41 (*a*).	Valves on Mains	525	11	514
42 (*a*).	Valve Boxes on Mains	74	2	72
43 (*a*).	Fire Hydrants	270	5	265
44 (*a*).	Services & Fittings	4,416	88	4,328
45 (*a*).	Meters	10,021	501	9,520
46 (*a*).	Meter Boxes & Vaults	2,868	59	2,809
51 (*a*).	Office Furnishings	275	0	275
	Total Cost of Reproduction Physical Plant	609,547	70,476	539,071
57.	Going Concern Value	60,955	7,048	53,907
	Total Cost of Reproduction of Property	670,502	77,524	592,978
58.	Operating Capital			5,000
	Total Reproduction Cost Including Operating Capital			597,978

Total Reproduction Cost Including Operating Capital 597,978

1649 *Summarized Estimate of the Cost of Reproducing Bluefield Valley Waterworks (Pre-war Price Basis).*

Item.	Cost to reproduce.	Depreciation.	Present worth.
Station	$1,700	$50	$1,650
Reservoir	1,240	40	1,200
Spring #1	759	24	735
" #2	513	13	500
Equipment	4,455	155	4,300
Miscellaneous	2,756	31	2,725
Lands & Rights	7,517	0	7,517
Overhead	3,250	80	3,170
Totals	$22,190	$393	$21,797
Totals Bluefield and Bluefield Valley Waterworks			$624,548

TABLE No. 2.

Showing Gross Income Required to Produce 7% Return and 2% Depreciation upon Various Valuations of the Bluefield Waterworks Property.

	Alvord & Burdick's 1915 book cost plus additions.	Miller's 1915 value additions to 1920.	Alvord & Burdick's pre-war cost to reproduce.	Alvord & Burdick's present cost to reproduce.	Alvord & Burdick's value.	Commission's 1915 value plus additions.
	$504,000	$480,000	$624,548	$1,193,663	$900,000	$448,000
(1) Cost of operation, excl. depreciation & fixed charges (1921)	58,500	58,500	58,500	58,500	58,500	58,500
(2) Depreciation, @ 2%	10,080	9,600	12,490	23,873	18,000	8,960
(3) Return @ 7%	35,280	33,600	43,716	83,554	63,000	31,360
(4) Gross Income required	$103,860	$101,700	$114,706	$165,927	$139,500	$98,820
(5) Excess above Gross for 1921 from present rates	24,985	22,825	35,831	87,052	60,625	19,945
(6) Per cent increase in present rates to produce income in line (4)	31.6%	29%	45.5%	110%	76.8%	25.3%

Summarized Estimate of the Cost of Reproduction of Bluefield Water Works and Improvement Company's Properties (Present Price Basis).

Item No.	Description.	Cost to reproduce.	Depreciation.	Present worth.
1.	Preliminary Cost	29,754	0	29,754
2.	Real Estate & Rights of Way	38,963	0	38,963
3.	The Gravity Springs	25,108	2,737	22,371
	Water Rights	40,000	0	40,000
4.	The Ada Springs	33,000	7,260	25,740
	Water Rights	8,000	0	8,000
8.	Pipe Line from Gravity Springs to City	49,306	1,824	47,482
9.	Pipe Line from Ada Springs to City	136,782	5,061	131,721
11.	The Ada Sta. Bldg.	27,534	3,579	23,955
12.	The Steel Stack	6,348	2,266	4,082
13.	Coal Chute	1,567	205	1,362
14.	Oil House	347	45	302
15.	The Worthington Pump	2,661	894	1,767
16.	The Snow Pump	38,101	8,001	30,100
17.	Auxiliaries	1,962	700	1,262
18.	Boiler Plant	17,175	6,132	11,043
19.	All piping in station	3,137	1,120	2,017
20.	Piping in Sta. Yard	3,138	449	2,689
21.	Concrete Retaining Wall	2,590	311	2,279
22.	Sta. Yard Improvements	6,510	781	5,729
23.	Sta. Miscellaneous	2,376	1,352	1,024
32.	Cast Iron Street Mains	132,403	3,972	128,431
33.	Cast Iron Specials in Street Mains	5,138	154	4,984
34.	Laying Cast Iron Street Mains	49,365	1,481	47,884

Summarized Estimate of the Cost of Reproduction.—Continued.

Item No.	Description.	Cost to reproduce.	Depreciation.	Present worth.
35.	Galvanized Iron Street Mains	12,483	5,705	6,778
36.	Laying Galvanized Iron Street Mains	11,756	5,372	6,384
37.	Extra for Unusual Excavation	21,816	654	21,162
38.	Steam Railroad Crossing	2,604	78	2,526
39.	Street Railway Crossings	356	11	345
40.	Cutting through Pavements over Mains	49,740	2,837	46,903
41.	Valves on Mains	6,318	1,062	5,256
42.	Valve Boxes on Mains	1,003	168	835
43.	Fire Hydrants	975	164	811
44.	Services & Fittings	47,269	7,941	39,328
1652				
45.	Meters in Service	18,358	4,589	13,769
46.	Meter Boxes & Vaults	11,349	1,907	9,442
47.	Twin Tanks	66,858	28,281	38,577
48.	Bland St. Tank	14,531	8,094	6,437
49.	Electric Transmission Line	1,200	264	936
50.	Laboratory Equipment	250	0	250
51.	Office Furnishings	1,100	0	1,100
52.	Materials & Supplies	8,100	0	8,100
53.	Engineering & Superintending	49,591	5,852	43,739
54.	Administrative & Legal Costs	19,836	2,340	17,496
55.	General Contingent Costs	39,673	4,682	34,991
56.	Interest during Constr	50,881	5,847	45,034

Additions Since 1915.

23 (*a*).	Ada Sta. Miscellaneous	2,770	55	2,715
32 (*a*).	Cast Iron Street Mains	28,447	57	28,390
33 (*a*).	Cast Iron Specials in Street Mains	1,158	2	1,156
34 (*a*).	Laying Cast Iron Mains	9,607	19	9,588
35 (*a*).	Galvanized Iron Mains	3,956	222	3,734
36 (*a*).	Laying Galvanized — Mains	4,428	248	4,180
37 (*a*).	Extra for Unusual Excavation	3,865	8	3,857
38 (*a*).	Steam Railroad Crossings	385	....	385
39 (*a*).	Street Railway Crossings	84	....	84
41 (*a*).	Valves on Mains	1,143	23	1,120
42 (*a*).	Valve Boxes on Mains	149	3	146
43 (*a*).	Fire Hydrants	585	12	573
44 (*a*).	Services & Fittings	7,558	151	7,407
45 (*a*).	Meters	13,137	657	12,480
46 (*a*).	Meter Boxes & Vaults	6,545	131	6,414
51 (*a*).	Office Furnishings	420	0	420
	Total Cost of Reproduction Physical Plant	1,181,549	135,760	1,045,789
57.	Going Concern Value	118,155	13,576	104,579
	Total Cost of Reproduction of Property	1,299,704	149,336	1,150,368
58.	Operating Capital			5,000
	Total Reproduction Cost Including Operating Capital			1,155,368

1653 *Cost of Reproducing Bluefield Valley Waterworks (Present Price Basis).*

Item.	Cost to reproduce.	Depreciation.	Present worth.
Station	$3,115	$90	$3,025
Reservoir	2,479	79	2,400
Spring #1	1,079	39	1,040
" #2	1,002	32	970
Equipment	7,690	390	7,300
Miscellaneous	6,472	72	6,400
Land & Rights	7,517	0	7,517
Overhead	5,000	130	4,870
Totals	$35,354	$832	$34,522

Totals Bluefield & Bluefield Valley Waterworks, $1,194,663.

1653*a* *Analysis of Income and Operating Statistics of the Bluefield Water Works and Improvement Co.*

January 5, 1921.

Alvord & Burdick,

Hydraulic and Sanitary Engineers,

Hardford Building,

Chicago.

1653*b* *Analysis of Income and Operating Statistics of the Bluefield Water Works and Improvement Co.*

January 5, 1921.

Alvord & Burdick,

Engineers,

Chicago.

1654 *Analysis of Income and Operating Statistics of the Bluefield Water Works and Improvement Company.*

Mr. Wm. McCarthy,
Supt. Bluefield Water Works & Improvement Company,
Bluefield, W. Va.

DEAR SIR:

In accordance with your instructions, we have made an analysis of the income and operating statistics of the Bluefield Water Works and Improvement Company for the past five years, and have com-

pared the net returns for the several years of that period with various bases of value for the purpose of determining the equity of the existing rates. It is our conclusion that the existing rates produce insufficient revenue to meet the operating expense and provide a fair return on any reasonable value of the Bluefield Water Works property. A material increase in the rates and revenues is therefore necessary in order that the property may be made self-supporting.

We have incorporated the results of our analyses in two tables which are included herein. These tables are largely self-explanatory, and will be but briefly referred to in order to bring out some of the more important details.

1655 Table No. 1 has been prepared directly from the records of operation of your property. On this table are shown the various subdivisions of income and operating expense for each of the years from 1915 to 1919, inclusive, together with the same figures for 1920 (the first eleven months from the records and the last month estimated), and an estimate of the same items for the entire year of 1921.

It will be noticed from Table No. 1 that the gross revenue from water sales in 1915 and 1916 was substantially the same, viz. about $43,000. The operating expenses for these two years were also stationary at about $26,000, leaving a net income applicable for fixed charges, depreciation and return of $17,000 to $18,000.

Rate Proceedings.

Early in 1917, due to this country's active participation in the world war, the cost of operating the water works increased rapidly, being nearly 50% higher in that year than in the year previous. Effective May 1st, 1917, the Public Service Commission of West Virginia granted the Water Company an increase in rates which yielded about $1,000 per month additional revenue. In this year the revenues were $6,000 greater than in the year previous, the operating cost $12,000 greater, and the net income $6,000 less.

The Water Company appealed to the Public Service Com-
1656 mission for additional revenues. The Commission entered order, effective July 1, 1918, increasing the public fire protection charge $10,000 per year, and leaving all other rates as established by the Commission April 24, 1917. The gross income in 1918 was $57,461.46, and the net income $20,293.19.

During 1919 the costs of operation continued to increase rapidly, being nearly 25% higher than in 1918. Due to the increase in hydrant rentals, the net income remained practically stationary.

The rapidly increasing costs made it necessary to seek further relief from the Commission late in 1919. It was granted by an order issued to be effective Jan. 1, 1920. Under the new rates the gross income for 1920 is over $78,000, and the net $21,000. This amount is sufficient to set aside a 2% depreciation reserve and allow a 7% return on but $235,000, which is less than half of any reasonable valuation of the Company's property.

The necessity for a rate increase at the present time is primarily on account of the greatly increased costs of operation. The 1920 cost was over double that of 1915 and 1916; in fact, about 220%. The gross income had increased about 80% and the net income about 15%.

As compared to May, 1917, the date of the first decision in this case by the Public Service Commission, the gross income has increased to 50% above that determined by the Commission, 1657 the cost of operation increased from $22,700 to $57,500 (153%), and the net income decreased from the $28,800 determined by the Commis-ion as fair, to about $21,200, a loss of 25% on a plant investment nearly 25% larger than in 1917. In other words, the plant is now earning only 60% as much net return as was contemplated in the 1917 decision of the Commission.

Operating Statistics.

In order to show more clearly the facts of operation, we have prepared Table No. 1, in which the details of income and operating costs are shown grouped under suitable headings. The figures are compiled directly from the Company's records.

Every item of operation has increased, although some much more radically than others. The item of salaries has increased from $9,600 in 1915 to $11,788.45 in 1920, less than 25%, which is unusually low for this period.

Fuel has had a marked increase. The following table shows the tons used, and the average price paid for each year from 1915 to date:

Year.	Tons used.	Av. price per ton.
1915	990.45	$1.544
1916	807.9	2.10
1917	939.4	3.675
1918	610.75	3.716
1919	1,411.4	3.90
1920	1,555.	5.394

During 1920 coal costs reached a peak of $6.60 per ton at the plant.

TABLE No. 1.

Showing Income and Operating Expenses of the Bluefield Water Works and Improvement Co. from 1915 to 1921.

Item.	Years. 1915.	1916.	1917.	1918.	1919.	1920.	1921, estimated.
Water Rents.....	43,034.62	43,350.13	49,697.30	57,461.46	66,396.33	77,370.29	$77,500
Miscellaneous	832.15	1,887.79	1,384.92	759.27	1,306.26	1,373.72	1,375
Total	43,866.77	45,237.92	51,082.22	58,220.73	67,702.59	78,744.01	$78,875
Operating Expense:							
1. Salaries	9,600.00	9,810.95	9,900.00	10,233.41	11,008.65	11,788.45	$12,000
2. Fuel	2,314.78	1,769.54	3,243.11	2,124.14	5,131.16	8,369.38	8,500
3. Pumping at Bailey Springs	.....	.....	*5,848.14	*6,248.19	*3,866.43	*6,541.61	*6,000
4. Taxes	3,439.78	3,674.92	4,026.65	4,549.32	8,047.97	9,059.02	10,000
5. Station Labor.....	2,257.45	1,478.70	2,172.17	2,276.37	4,076.51	5,367.81	6,000
6. General Expense...	2,304.88	3,432.59	6,468.72	4,998.73	5,226.80	6,886.10	6,000
7. Maintenance, Repairs, and Supplies	6,321.29	6,296.03	6,467.87	7,497.38	9,151.41	9,526.21	10,000
Total	26,238.18	26,462.73	38,126.66	37,927.54	46,508.93	57,537.58	$58,500
Net income applicable to fixed charges, depreciation and dividends.....	17,628.59	18,775.19	11,955.56	20,293.19	21,193.66	21,206.43	$20,375
Amount on which Net Income equals 8%.....	$220,000.	$234,000.	$149,000.	$253,000.	$264,000.	$264,000.	$254,000
Amount on which Net Income equals 9%.....	196,000.	208,000.	133,000.	225,000.	235,000.	235,000.	226,000

*Cost of pumping only—$1,440 less than shown on Company's books.

1659 The item "Pumping from Bailey Springs" is $1,440 less each year than shown on the Company's books, this amount being 6% on the $24,000 of preferred stock of the Bluefield Valley Water Company. In this report the entire property is considered as a unit, and the duplication of fixed charges is eliminated.

Taxes have increased from $3,439.78 in 1915 to $9,059.02 in 1920. They are estimated at $10,000 for 1921.

General Expense and Maintenance charges have nearly doubled in the past six years, due largely to rising costs of labor and materials.

Adequacy of Net Income.

The lower lines of Table No. 1 show the investment upon which the net income for each year would provide 2% for depreciation reserve and 6% and 7%, respectively, for return. In 1921 it is estimated that the net income would be 8% of $254,000 and 9% of $226,000, either of which figures is very much less than even the 1917 value, and without any consideration of capital expenditures made since that date.

Increased Revenues Necessary.

It is apparent from the foregoing that the present rate schedule products a grossly inadequate revenue, one very much less than the Commission contemplated in its 1917 decision.

1660 Table No. 2 has been prepared to show in a concise form the amount of increase expressed as a percentage which would be necessary to

(1) Pay operating expenses,

(2) Set aside 2% for depreciation reserve, and

(3) Earn 7% for return,

on several bases of value. We have shown these figures for the following values:

(*a*) Alvord & Burdick's 1915 book cost plus additions.
(*b*) Miller's 1915 valuation plus additions.
(*c*) Alvord & Burdick's 1920 cost of reproduction, using prewar prices.
(*d*) Alvord & Burdick's 1920 cost of reproduction, using 1920 prices.
(*e*) Alvord & Burdick's 1920 conclusion as to value.
(*f*) Commission's 1915 value plus additions.

It will be noticed from this table that even under the lowest value the rates would have to be increased 25%. On either the book cost or Mr. Miller's value brought up to date a 30% raise would be required, and on the Alvord & Burdick figures from 42 to 106%.

The present rates are inadequate on any valuation by from 25 to 100%. It is evident, therefore, that the rates for water service
1661 furnished by the Bluefield Water Works and Improvement Company must be very materially increased.

Respectfully submitted,

ALVORD & BURDICK,
By L. R. HOWSON.

Chicago, Illinois,
January 5th, 1921.

1289

1662

TABLE NO. 2.

Showing Gross Income Required to Produce 7% Return and 2% Depreciation upon Various Valuations of the Bluefield Waterworks Property.

	Alvord & Burdick's 1915 book cost plus additions.	Miller's 1915 value additions to 1920.	Alvord & Burdick's prewar cost to reproduce.	Alvord & Burdick's present cost to reproduce.	Alvord & Burdick's value.	Commission's 1915 value plus additions.
	$504,000	$480,000	$624,548	$1,193,663	$900,000	$448,000
(1) Cost of operation, excl. depreciation & fixed charges (1921)	58,500	58,500	58,500	58,500	58,500	58,500
(2) Depreciation, @ 2%	10,080	9,600	12,490	23,873	18,000	8,960
(3) Return @ 7%	35,280	33,600	43,716	83,554	63,000	31,360
(4) Gross Income required	$103,860	$101,700	$114,706	$165,927	$139,500	$98,820
(5) Excess above Gross for 1921 from present rates	24,985	22,825	35,831	87,052	60,625	19,945
(6) Percent increase in present rates to produce income in line (4)	31.6%	29%	45.5%	110%	76.8%	25.3%

1662½ *Valuation as of December* 31, 1920.

The Public Service Commission of West Virginia, Charleston.

Engineering Department.

W. Q. Gallaher, Chief Engineer.

Case No. 1138.

BLUEFIELD WATER WORKS & IMPROVEMENT CO., Bluefield, West Virginia.

Application to Increase Water Rates.

March Eleventh, 1921.

1663 The Public Service Commission of West Virginia, Charleston.

Ernest D. Lewis, Chairman; George R. C. Wiles, Edgar G. Rider; R. B. Bernheim, Secretary.

March Eleventh, 1921.

Case No. 1138.

In re BLUEFIELD WATER WORKS & IMPROVEMENT CO.

Application to Increase Water Rates.

The Public Service Commission of West Virginia,
Charleston, West Va.

GENTLEMEN:

Complying with your instructions this department has made, and is submitting to you under this cover, an appraisal of the properties of the Bluefield Water Works & Improvement Company, Bluefield, West Virginia, said appraisal being as of December 31, 1920.

As per your suggestion the following method was used in determining a fair value for rate making:

To the Reproduction Cost New Less Present Depreciation of the Applicant's property as of December 31, 1915, was added the actual gross investments made between that date and December 31, 1920, after deducting therefrom the estimated depreciation resulting during that period.

In determining the above Estimated Reproduction Cost New Less Depreciation, the bases of this estimate will be discussed.

Quantities.

Two valuations of the Applicant's property as of December 31, 1915 have been made, one by Messrs. Alvord & Burdick of
1664 Chicago who were engaged by the Company, and the other by Mr. W. E. Miller of Madison, Wis. representing the City of Bluefield. Since these two valuations are practically identical in so far as the inventories are concerned, their accuracy in that respect is assumed, and the quantities used in this valuation, except in certain items which have since 1915 been removed, correspond to those used by Messrs. Alvord and Burdick and Mr. Miller. This assumption however, is only as to the details, as the principal items were checked, as far as possible, by actual physical inspection and the lengths of the various pipe lines verified by scaling maps, which were furnished by the Company and on which were shown all the pipe lines.

Unit Prices.

The Unit Prices used on materials and labor are those which might be termed "Normal" or "Prewar," being those that prevailed about the year 1915. The values placed on Real Estate and Right of Way conform to those in an appraisal of same by Messrs. Donohue & Easley, prominent real estate dealers of Bluefield.

Depreciation.

The depreciation of the various items was estimated by means of the "Straight Line Method," i. e. by ascertaining from reliable tables the probable life in years of the different elements and knowing the approximate age of that particular one, it was possible to estimate its per cent condition. Obviously, the probable life in years of any element will be almost wholly dependent on the care exercised
1665 in maintaining it, therefore a physical inspection was made of all the items practicable, in order to make the proper adjustment in the estimated lives as set forth in the tables. The entire plant as a unit, by the above method, was found to be in 80.9 per cent condition.

* * * * * * *

It is to be noted in this appraisal that, owing to insufficient clerical force and to lack of time, the Detailed Summary shown on subsequent sheets of this report does not list each separate article, but only the sub-headings. The arrangement of these however, is the same as in the report of Messrs. Alvord & Burdick and by referring to that, it is possible to ascertain the detailed list of the labor and materials which constitute each of the headings listed.

It is to be further observed, that the notation of the principal items correspond to that of Messrs. Alvord & Burdick and also, that several or parts thereof have been omitted. Those thus treated and for the reasons stated are as follows:

Item No. 1. Preliminary Cost.—The value of this item is included in "Overheads."

Item- Nos. 3, 4, 6. Water Rights of Gravity, Ada, and Beaver Pond Springs.—This value being of an intangible or hypothetical nature and therefore not a question of engineering is referred to the judgment of the Commission.

Item No. 5. Jarrell Spring.—Undeveloped and therefore neither used nor useful.

1666 Item No. 7. Reservoir and Dam.—Present value nil.

Item No. 10. Pipe Line from Beaver Pond to City.—Line abandoned, pipe taken up and relayed elsewhere.

Item- Nos. 25-31 inclusive. Equipment of Beaver Pond Pumping Station.—Has all been removed and is no longer a part of the property.

Item- Nos. 53-56 inclusive. Engineering and Superintendence, Administrative and Legal Cost, General Contingencies, and Interest During Construction.—Included in Overheads.

Item No. 57. Going Concern Value.—Intangible and referred to the Commission.

On subsequent sheet of this report will be found a Condensed Summary of Values, followed by a more detailed one.

Respectfully submitted,

W. Q. GALLAHER,
Chief Engineer.

W. Q. G./B.

Bluefield Water Works & Improvement Co., Bluefield, West Virginia.

Alvord's item No.	Description.	Cost of reproduction. As of Dec. 31, 1915.	Additions.	Cost of reproduction. As of Dec. 31, 1920.	Cost of reproduction, less depreciation. As of Dec. 31, 1915.	Additions.	Cost of reproduction, less depreciation. As of Dec. 31, 1920.
2.	(*a*) Real Estate	17,860.00	4,773.09	22,633.09	17,860.00	4,773.09	22,633.09
	(*b*) Rights of Way	5,102.00	.....	5,102.00	5,102.00	.....	5,102.00
	(*c*) Buildings and Improvements	17,797.06	71.96	17,869.02	13,935.87	67.64	14,003.51
3.	The Gravity Springs	14,801.45	.....	.....	9,320.87	.....	.....
4.	The Ada Springs	17,377.74	.....	.....	13,024.04	.....	.....
6.	Beaver Pond Spring No. 23	182.40	.....	.....	134.98	.....	.....
	Total 3-6 incl	32,361.59	67.77	32,429.36	22,479.89	63.70	22,543.59
8.	Pipe Line Gravity Sprs. to City	19,112.53	.....	19,112.53	16,819.03	.....	16,819.03
9.	" " Ada Sprs. to City	52,015.94	.....	52,015.94	45,774.03	.....	45,774.03
11.	The Ada Station Buildings	13,867.65	.....	.....	8,984.71	.....	.....
12.	Steel Stack	2,913.00	.....	.....	1,596.32	.....	.....
13.	Coal Chute	692.82	.....	.....	498.83	.....	.....
14.	Oil House	163.80	.....	.....	117.94	.....	.....
15.	Worthington Pump	1,464.02	.....	.....	488.00	.....	.....
16.	The Snow Pump	20,535.82	.....	.....	13,348.28	.....	.....
17.	Auxiliaries	842.83	.....	.....	547.84	.....	.....
18.	The Boiler Plant	5,304.24	.....	.....	3,447.76	.....	.....
19.	All Piping in Station	1,365.41	.....	.....	723.67	.....	.....
20.	Piping in Station Yard	1,243.04	.....	.....	994.43	.....	.....
21.	Concrete Retaining Wall	1,190.00	.....	.....	975.80	.....	.....

22.	Staton Yard Improvements	1,886.70	.....	.....	1,471.63	.....	.....	
23.	Station Miscellaneous	1,378.13	.....	.....	710.75	.....	.....	
	Total 11-23 incl	52,847.46	2,155.08	55,002.54	34,905.96	1,903.45	36,890.41	
	Carry Forward	197,096.58	7,067.90	204,164.48	156,876.78	6,897.88	163,774.66	
1068	Brought Forward	197,096.58	7,067.90	204,164.48	156,876.78	6,897.88	163,774.66	
24.	Beaver Pond Station	777.53	.....	777.53	427.64	.....	427.64	
32.	Cast Iron Mains—Street	42,968.72	24,116.39	67,085.11	35,294.51	23,392.90	58,687.41	
33.	C. I. Specials on St. Mains	1,926.60	.....	1,926.60	1,582.51	.....	1,582.51	
34.	Laying C. I. Street Mains	19,875.26	12,532.40	32,407.66	16,325.54	12,156.43	28,481.97	
35.	Galv. Iron Street Mains	8,422.47	.....	8,422.47	6,353.07	.....	6,353.07	
36.	Laying G. I. Street Mains	5,628.00	.....	5,628.00	4,245.76	.....	4,245.76	
37.	Extra for Unusual Excavation	7,566.20	.....	7,566.20	6,612.86	.....	6,612.86	
38.	Steam Railroad Crossings	1,687.00	.....	1,687.00	1,385.70	.....	1,385.70	
39.	(*a*) Street Railway Crossings over C. I. Mains	144.00	.....	144.00	118.28	.....	118.28	
	(*b*) Street Railway Crossings over G. I. Mains	16.00	.....	16.00	12.07	.....	12.07	
40.	(*a*) Cutting Pavement over G. I. Mains	233.00	.....	233.00	209.70	.....	209.70	
41.	Valves on Mains	2,873.23	.....	1,873.23	1,896.33	.....	1,896.33	
42.	Valve Boxes on Mains	540.86	.....	540.86	356.97	.....	356.97	
43.	Fire Hydrants	435.00	.....	435.00	287.10	.....	287.10	
44.	Services	3,178.64	3,899.82	7,078.46	2,119.19	3,665.83	5,785.02	
45.	Meters in Service	16,444.00	15,967.88	32,411.88	10,688.60	14,051.73	24,740.33	
46.	Meter Boxes and Vaults	5,526.94	.....	5,526.94	3,647.78	.....	3,647.78	
	Carry Forward	315,340.63	63,584.39	378,924.42	248,440.39	60,164.77	308,605.16	

Alvord's item No.	Description.	Cost of reproduction. As of Dec. 31, 1915.	Additions.	As of Dec. 31, 1920.	Cost of reproduction, less depreciation. As of Dec. 31, 1915.	Additions.	As of Dec. 31, 1920.
	Brought Forward.....	315,340.03	63,584.39	378,924.42	248,440.39	60,164.77	308,605.16
47.	Twin Tanks.....	32,109.30	.....	.....	24,724.16	.....	.....
48.	Bland Street Tank.....	6,245.17	.....	.....	3,309.94	.....	.....
	Total 47-48 incl.....	38,354.47	298.63	38,653.10	28,034.10	283.70	28,317.80
49.	Electrical Transmission Line.....	642.20	.....	642.20	500.92	.....	500.92
50.	Laboratory Equipment.....	300.00	39.67	339.67	300.00	35.00	335.00
51.	Office Furniture and Fixtures.....	1,500.00	626.38	2,126.38	1,350.00	600.00	1,950.00
52.	Materials, Supplies, Tools, Equipment, etc.....	6,600.00	2,971.46	9,571.46	5,940.00	2,822.00	8,762.00
	Total	362,736.70	67,520.53	430,257.23	284,565.41	63,905.47	348,470.88
	Overheads:						
	Engineering & Superintendence 4%	.....	.....	.....	.....	.....	.....
	Genl. Admin. & Legal 1½%...	.....	.....	.....	.....	.....	.....
	Genl. Cont. dur. Cons. 1½%..	.....	.....	.....	.....	.....	.....
	Interest " " 3%....	.....	.....	.....	.....	.....	.....
	Prelim. Organ. & Devel. 3%...	.....	.....	.....	.....	.....	.....
	Total Overheads 13%.....	47,155.77	.....	47,155.77	36,993.50	.....	36,993.50
	Working Capital.....	.....	.....	.....	.....	.....	.....
	Grand Total.....	489,913.00	.....	489,913.00	.....	.....	397,964.38

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Engineering Department,

Public Service Commission of West Virginia.

Valuation of the Property of Bluefield Water Works and Improvement Company.

Detailed Summary.

Account, Item No. 2. Real Estate and Rights-of-Way—(Cont'd).

(*c*) Buildings and Improvements.

Description.	Cost of reproduction.	Per cent condition.	Present value.
At Beaver Pond Springs:			
One three room and enclosed porch one story, frame cottage, on stone foundation	1,137.60	53	602.93
At Ada Pumping Station:			
One three room, one story frame cottage	502.00	55	276.10
At Spring No. 6:			
Frame tool house, built of rough lumber	74.28	77.5	57.57
At Spring No. 15 (Henry Bailey Farm):			
Farm house. 8 room, two story frame structure on masonry piers	1,330.00	66.7	887.11
Barn and Crib. Built of rough lumber	638.40	50	319.20
Spring House. Rough frame construction	24.60	50	12.30
Fencing	1,014.50	50	507.25
Spring No. 2 (Ada Spring):			
Farm House. Four room, one story frame structure	568.00	55	312.40

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Barn. Rough frame structure	130.20	55	71.61
Spring House. Frame building, covered with sheathing and weatherboard, pine floor	34.00	55	18.70

Valuation of the Property of Bluefield Water Works and Improvement Company.—Continued.

Description.	Cost of reproduction.	Per cent condition.	Present value.
Dairy or root house. Frame building, covered with earth.....	14.88	40	5.95
Tool House. A rough frame building	50.40	55	27.72
Board Walks	10.00	40	4.00
Fencing	184.20	55	101.31
At Ruble Farm (Jarrell Spring):			
Farm House. Five room, one story frame building	868.00	50	434.00
Tool House. Rough frame building, with clap board roof.....	50.00	50	25.00
Office Building:			
One and a half story building, with basement. Outside walls of brick veneer, set against sheathing. The roof containing four dormer windows, is covered with galvanized shingles. Main floor plastered throughout and well trimmed. Entire building is electric-lighted and heated by hot water	10,062.00	92	9,257.04
1672			
Garage. One story building similar in construction to the office building and built in connection therewith. Roof of tin and contains 6″ x 6″ galvanized iron sky light. Floor partly of concrete and partitions of pressed galvanized iron	1,104.00	92	1,015.68
Total (c) Buildings & Improvements	17,797.06		13,935.87

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Engineering Department,

Public Service Commission of West Virginia.

Valuation of the Property of Bluefield Water Works and Improvement Company.

Detailed Summary.

Account, Water Supply.

Item No. 3. The Gravity Springs.

Description.	Cost of reproduction.	Per cent condition.	Present value.
(*a*) Spring No. 1:			
(1) Land Improvements	151.50	74	112.11
(2) Infiltration Lines	106.25	57	60.56
(3) Head House	72.90	67	48.86
Piping in Head House	16.30	74	12.06
(*b*) Spring No. 2:			
(1) Land Improvements	170.26	74	126.00
(2) Infiltration Lines	137.50	57	78.38
(3) Head House	69.65	67	46.67
Piping in Head House	14.98	74	11.09
(*c*) Spring No. 3:			
(1) Land Improvements	333.60	74	246.86
(2) Infiltration Lines	1,861.00	57	1,060.77
(3) Head House	65.40	67	43.82
Piping in Head House	13.80	74	10.21
(*d*) Spring No. 4:			
(1) Land Improvements	378.10	74	279.79
(2) Infiltration Lines (A)	513.50	57	292.70

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(3) Head House (A)	66.35	67	44.46
Piping in Head House (A)	13.05	74	9.66
(1) Infiltration Lines (B)	1,128.50	57	643.25
(2) Head House (B)	290.85	67	194.87
Piping in Head House (B)	23.20	74	17.17
(*e*) Spring No. 5:			
(1) Land Improvements	103.00	74	76.22
(2) Infiltration Lines	283.50	57	161.60
(3) Head House	48.50	67	32.50
Piping in Head House	12.40	74	9.18

Valuation of the Property of Bluefield Water Works and Improvement Company.—Continued.

(*f*) Spring No. 6:

Description.	Cost of reproduction.	Per cent condition.	Present value.
(1) Land Improvements	697.25	76	529.91
(2) Infiltration Lines (A).....	1,477.85	60	886.71
(3) Head House (A).....	100.25	70	70.18
Piping in Head House (A).....	27.58	76	20.96
1675			
(1) Infiltration Lines (B).....	553.75	60	332.25
(2) Head House (B).....	69.50	70	48.65
(3) Piping in Head House (B).	18.06	76	13.73
Concrete Retaining Wall.....	39.00	70	27.30
Tool House	99.20	60	59.52
(*g*) Springs Nos. 7 & 8:			
(1) Land Improvements	260.75	76	198.17
(2) Infiltration Lines (7-A).....	30.63	60	18.38
(3) Head House (7-A).....	52.65	70	36.85
Piping in Head House.....	15.10	76	11.48
(1) Infiltration Lines (7-B).....	1,083.75	60	650.25
(2) Head House (7-B).....	84.55	70	59.19
Piping in Head House.....	20.35	76	15.47
(1) Infiltrations Lines (7-C)....	381.25	60	228.75
(2) Head House (7-C).....	54.57	70	38.20
Piping in Head House.....	31.05	76	23.60
1676			
(*h*) Spring No. 9:			
(1) Land Improvements	226.50	76	172.14
(2) Infiltration Lines	1,858.75	60	1,115.25
(3) Head House	86.00	70	60.20
(*i*) Spring No. 10:			
(1) Land Improvements	66.60	76	50.62
(2) Infiltration Lines	170.00	60	102.00
(3) Head House	79.25	70	55.48
(4) Piping in Head House.....	24.70	76	18.77
(*j*) Spring No. 11:			
(1) Land Improvements	90.20	76	68.55
(2) Infiltration Lines	5.00	60	3.00
(3) Head House	51.50	70	36.05
(4) Piping in Head House.....	18.20	76	13.83
Total Gravity Springs....	14,801.45		9,320.87

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Engineering Department,

Public Service Commission of West Virginia.

Valuation of the Property of Bluefield Water Works and Improvement Company.

Detailed Summary.

Account, Water Supply.

Item No. 4. The Ada Springs.

Description.	Cost of reproduction.	Per cent condition.	Present value.
(*a*) Spring No. 12:			
(1) Land Improvements	981.68	84	824.61
(2) Infiltration Lines	544.40	73	397.41
(3) Head House	92.45	70	64.72
(4) Piping in Head House.....	21.87	76	16.62
(*b*) Spring No. 13:			
(1) Land Improvements	335.60	84	281.90
(2) Infiltration Lines	356.25	73	260.06
(3) Head House	93.35	80	74.68
(4) Piping in Head House.....	20.83	84	17.50
(*d*) Spring No. 15:			
(1) Land Improvements .. .	981.68	84	824.61
(2) Infiltration Lines	544.40	73	397.41
(3) Head House	101.65	80	81.33
(4) Piping in Head House.....	15.40	84	12.94
(*d*) Spring No. 15:			
Land Improvements	72.00	84	60.48

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(*e*) Spring No. 16:			
(1) Land Improvements	243.65	84	204.67
(2) Infiltration Lines	723.75	73	528.34
(3) Head House	61.45	80	49.16
(4) Piping in Head House.....	15.00	84	12.60
(*f*) Spring No. 17:			
(1) Land Improvements	318.00	84	267.12
(2) Infiltration Lines	807.50	73	589.48
(3) Head House	66.00	80	52.80
(4) Piping in Head House.....	17.60	84	14.78

Valuation of the Property of Bluefield Water Works and Improvement Company.—Continued.

(*g*) Spring No. 18:

Description.	Cost of reproduction.	Per cent condition.	Present value.
(1) Land Improvements	837.00	84	703.08
(2) Infiltration Lines (18-A)	347.50	73	253.68
(3) Head House (18-A)	65.10	80	52.08
(4) Piping in Head House (18-A)	20.65	84	17.35
(1) Infiltration Lines (18-B)	3,397.05	73	2,479.84
(2) Head House (18-B)	143.20	80	114.56
(3) Piping in Head House (18-B)	38.03	84	31.95

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(*h*) Spring No. 20:

Land Improvements	48.80	67	32.70

(*i*) Spring No. 21:

(1) Fencing	52.05	67	34.88
(2) Basin	5,593.70	74	4,139.34
(3) Outlet Box from Basin	63.49	74	46.98
(4) Spring House	540.35	67	362.03
(5) Piping at Spring House	43.00	74	31.82
(6) Miscellaneous	549.91	67	368.44

(*j*) Spring No. 22:

(1) Land Improvements	670.00	74	495.80
(2) Infiltration Lines	80.90	57	46.11
(3) Head House	101.80	67	75.33
(4) Piping in Head House	11.10	74	8.21
Total Ada Springs	17,377.74		13,024.04

Item No. 6.

Beaver Pond Spring No. 23:

Land Improvements	182.40	74	134.98
Total Beaver Pond Spring.	182.40		134.98

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Engineering Department,

Public Service Commission of West Virginia.

Valuation of the Property of Bluefield Water Works and Improvement Company.

Detailed Summary.

Item No. 8. Pipe Line from Gravity Springs to City.

Account, Water Supply.

(*a*) Cast Iron Pipe:

Description.	Cost of reproduction.	Per cent condition.	Present value.
Weight on above pipe—			
202.1 tons @ 24.41.....	4,933.26		
141.7 " @ 26.06.....	3,692.70		
Cast Iron Specials on Above Pipe:			
Weight of above specials, 3,787# @ 0.03.....	113.61		
Valves:			
4—6" double gate valves, set			
13—4" " " " "			
4—4" check valves, set....	240.00		
(*b*) Laying the Pipe Lines:			
12,133 lin. ft. of 6" pipe @ .326	3,955.36		
10,336 lin. ft. of 4" pipe @ .282	2,914.17		
3,652 lin. ft. of 3" pipe @ .249	909.35		
(*c*) Extra for Unusual Excavation:			
Solid Rock Trenches:			
708 cu. yds. rock excavation @ 3.00	2,124.00		
Shale Trenches:			
1,530 lin. ft. shale trench @ .15	229.50		
Total item No. 8.....	19,112.53	88	16,819.03

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Valuation of the Property of Bluefield Water Works and Improvement Company.

Detailed Summary.

Account, Water Supply.

Item No. 9. Pipe Line from Ada Springs to City.

Description.	Cost of reproduction.	Per cent condition.	Present value.
(*a*) Cast Iron Pipe:			
Weight of above pipe—			
1,064.8 Tons @ 24.41.....	25,991.77		
85.8 " @ 26.06.....	2,235.95		
Cast Iron Specials:			
Weight on above specials, 13,334# @ 0.03.....	400.02		
Valves:			
8—4" double gate valves, set			
9—6" " " " "			
1—8" " " " "			
1—10" " " " "			
1—6" horizontal check valve, set			
2—10" horizontal check valve, set	365.00		
(*b*) Laying Pipe Line:			
21,579 lin. ft. 10" pipe @ .277..	5,977.38		
9,401 " 8" " @ .245..	2,303.25		
2,943 " 6" " @ .217..	638.63		
2,055 " 4" " @ .188..	386.34		
7,094 " 3" " @ .166..	1,177.60		
Total (*b*)	10,483.20		

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(*c*) Extra for Unusual Excavation:			
Rock Trenches:			
3,065 cu. yds. rock excavation @ 3.00	9,195.00		

Valuation of the Property of Bluefield Water Works and Improvement Company.—Continued.

Shale Trenches:

Description.	Cost of reproduction.	Per cent condition.	Present value.
4,200 lin. ft. shale trenches @ .15	630.00		
Wet Trenches:			
6,400 lin. ft. wet trenches @ .35	2,290.00		
Steep Hillside Trenches:			
700 lin. ft. trench @ .15	105.00		
(*d*) Miscellaneous Crossings:			
6 stream crossings @ 20.00	120.00		
River and Railroad Crossings:			
2 of the above crossings @ 100.00	200.00		
Total item No. 9	52,015.94	88	45,774.03

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Engineering Department,

Public Service Commission of West Virginia.

Valuation of the Property of Bluefield Water Works and Improvement Company.

Detailed Summary.

Account, The Pumping Stations.

Item No. 11. The Ada Station Building.

(*a*) The Building:

(1) Excavation:

Description.	Cost of reproduction.	Per cent condition.	Present value.
331 cu. yds. of excavation requiring bracing @ 1.50	496.50		

Valuation of the Property of Bluefield Water Works and Improvement Company.—Continued.

Description.	Cost of reproduction.	Per cent condition.	Present value.
(2) Foundations to Floor Line:			
264 cu. yds. concrete @ 7.00.	1,848.00		
(3) Walls	4,558.33		
(4) Structural Steel in Roof Trusses	2,600.00		
(5) Lumber in Roof and Ventilator	884.03		
(6) Roofing and Gutters	1,140.80		
(7) Downspouts	36.80		
(8) Painting	40.00		
(*b*) Engine Room:			
(1) Floor	460.00		
(2) Interior Trim	110.46		
1684			
(3) Doors and Windows:			
1 pair outside sliding doors	70.00		
2 inside doors and frames	45.00		
7 twin windows, frames, weights and cords	265.00		
1 single window and frame	15.00		
(4) Painting and Varnishing:			
5,100 sq. ft. wall @ 0.03	153.00		
3,700 " roof @ 0.02	74.00		
Woodwork filled and varnished with two coats varnish	30.00		
(*c*) Boiler Room:			
(1) Floor:			
750 sq. ft. of 8" concrete floor @ 0.23	172.50		
(2) Doors and Windows:			
1 pair outside sliding doors	70.00		
3 twin windows @ 40.00	120.00		
4 twin windows	115.00		
5 single windows and frames @ 10.00	50.00		
1685			
(3) Painting	50.00		
(4) Miscellaneous	3.35		

Valuation of the Property of Bluefield Water Works and Improvement Company.—Continued.

(*d*) Coal Bin:

Description.	Cost of reproduction.	Per cent condition.	Present value.
(1) Floor:			
500 sq. ft. of 8" concrete....	90.00		
(2) Roof	225.04		
(3) Painting	3.00		
(*e*) Tool Room:			
(1) Floor:			
112 sq. ft. of 8" concrete floor	20.16		
(2) Roof	102.52		
(3) Shelving	4.16		
(4) Painting	15.00		
Total item No. 11.....	13,867.65	72	9,984.71

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Public Service Commission of West Virginia.

Valuation of the Property of Bluefield Water Works and Improvement Company.

Detailed Summary.

Account, The Pumping Stations.

Item No. 12. Steel Stack.

(*a*) Excavation:

Description.	Cost of reproduction.	Per cent condition.	Present value.
187 cu. yds. 16 ft. deep @ 1.50	280.50		
(*b*) Foundation	939.40		
(*c*) Stack	1,693.10		
Total item No. 12.....	2,913.00	54.8	1,596.32

The Pumping Stations.

Item No. 13. Coal Chute.....	692.82		
Total item No. 13.....	692.82	72	498.83

Valuation of the Property of Bluefield Water Works and Improvement Company.—Continued.

The Pumping Stations.

Item No. 14. Oil House.

Description.	Cost of reproduction.	Per cent condition.	Present value.
(*a*) Foundation	22.50		
(*b*) Walls	82.14		
(*c*) Roof	41.16		
(*d*) Floor	2.50		
(*e*) Door	15.00		
Total item No. 14	163.80	72	117.94

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Item No. 15. The Worthington Pump.

(*a*) Pumping Engine	1,250.00		
(*b*) Foundation	94.00		
(*c*) Concrete Pit	78.75		
(*d*) Suction and Discharge Piping	41.27		
Total item No. 15	1,464.02	33	488.00

Item No. 16. The Snow Pump.

(*a*) Pumping Engine:			
Erected complete	19,260.00		
(*b*) Foundation	969.10		
(*c*) Suction and Discharge Piping	306.72		
Total item No. 16	20,535.82	65	13,348.28

Item No. 17. Auxiliaries.

(*a*) Feed Water Pump	100.00		
(*b*) Feed Water Heaters:			
(1) Worthington Pump Heater	125.00		

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(*a*) Foundation	20.05		
(*b*) Fittings	3.41		
(2) Secondary Heater	125.00		
(3) Primary Heater	150.00		
(*c*) Oil Separator and Tank	230.00		
Fittings	4.37		
(*d*) Hot Water Tank	55.00		
(*e*) Steam Separator	30.00		
Total item No. 17	842.83	65	547.84

Valuation of the Property of Bluefield Water Works and Improvement Company.—Continued.

Item No. 18. Boiler Plant.

Description.	Cost of reproduction.	Per cent condition.	Present value.
(*a*) 1 Battery containing two Sterling 148 H. P. boilers, complete with cast iron front, doors, grates, etc., erected complete	3,256.00		
(*b*) Miscellaneous Piping on Both Boilers	55.41		
(*c*) Boiler blow-off Pipes for Both Boilers	74.12		
1689			
(*d*) Boiler Settings	1,537.71		
(*e*) Smoke Flue	381.00		
Total item No. 18	5,304.24	65	3,447.76

Item No. 19. All Piping in Station.

(*a*) Hot Water Pipes	122.17		
(*b*) Miscellaneous Water Pipes	215.03		
(*c*) Steam Piping in Station:			
Main Steam Header and Header for Auxiliaries	271.75		
Steam Line to Snow Pump	38.53		
Steam Line to Worthington Pump	115.38		
Auxiliary Exhaust Header	35.90		
Steam Exhaust and Miscellaneous Piping for Boiler Feed Pump	34.12		
Steam Exhaust & Miscellaneous Piping to Wet Vacuum Pump	14.21		
1690			
Steam, exhaust and Miscellaneous Piping to Dry Vacuum Pump	5.60		
Steam, exhaust and Miscellaneous Piping to Jacket Pump	7.12		
Exhaust Piping to Air Pumps	3.37		
Miscellaneous Steam and Exhaust Piping	83.22		
Radiator in Engine Room	99.96		

Valuation of the Property of Bluefield Water Works and Improvement Company.—Continued.

Description.	Cost of reproduction.	Per cent condition.	Present value.
(*d*) Miscellaneous Drain Piping and Vents in Station.....	319.05		
Total item No. 19.....	1,365.41	53	723.67
Item No. 20. Piping in Station Yard.			
Pump Suctions	170.72		
Pump Discharges	893.20		
Connection from Spring No. 22..	130.22		
Blow-off from Spring Line to Creek	48.90		
Total item No. 20.....	1,243.04	80	994.43
1691 Item No. 21. Concrete Retaining Wall.			
Wall Lift	1,190.00		
Total Item No. 21.....	1,190.00	82	975.80
Item No. 22. Station Yard Improvements	1,886.70		
Total item No. 22.....	1,886.70	78	1,471.63
Item No. 23. Station Miscellaneous.			
Radiator Frame	19.98		15.00
Pump	75.00		40.00
Boiler	800.00		250.00
Table	15.00		12.50
Pictures and Frames.....	5.00		4.00
Coal Scales	106.60		86.60
Coal Wagon	30.00		25.00
Oil Filter	30.00		25.00
Pit to Cavern under Station.....	40.36		30.00
Pit for Snow auxiliaries.....	144.28		118.40
1692			
Iron Spiral Stairway in Auxiliary Pit	100.00		95.00
Board Walk over Auxiliary Pit...	3.91		3.25
Hangers for Pipes.....	8.00		6.00
Total item No. 23.....	1,378.13	51.5	710.75

Valuation of the Property of Bluefield Water Works and Improvement Company.—Continued.

Item No. 24. The Beaver Pond Station Building.

Description.	Cost of reproduction.	Per cent condition.	Present value.
(1) Foundation	20.00		
(2) Walls and Framing	393.78		
(3) Lumber in Roof	144.96		
(4) Roofing	90.00		
(5) Doors and Windows	60.00		
(6) Coal Bin	43.79		
(7) Painting	25.00		
Total item No. 24	777.53	55	427.64

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Engineering Department,

Public Service Commission of West Virginia.

Valuation of the Property of Bluefield Water Works and Improvement Company.

Detailed Summary.

Account, The Distribution System.

Item No. 32. Cast Iron Street Mains.

Description.	Cost of reproduction.	Per cent condition.	Present value.
1,271.8 tons of 5" to 10" C. I. H. & S. pipe	32,303.72		
392.5 tons of 3" and 4" C. I. H. & S. pipe	10,597.50		
2.5 tons of 4" C. I. H. & S. hydrant pipe	67.50		
Total item No. 32	42,968.72	82.14	35,294.51

Item No. 33. Cast Iron Specials in Street Mains.

32.11 tons of C. I. specials in street mains	1,926.60		
Total item No. 33	1,926.60	82.14	1,582.51

Valuation of the Property of Bluefield Water Works and Improvement Company.—Continued.

Item No. 34. Laying Cast Iron Street Mains.

Description.	Cost of reproduction.	Per cent condition.	Present value.
15,350 lin. ft. 10" C. I. pipe @ 0.253	3,883.55		
11,840 lin. ft. 8" C. I. pipe @ 0.227	2,687.68		
31,475 lin. ft. 6" C. I. pipe @ 0.206	6,483.85		
28,336 lin. ft. 4" C. I. pipe @ 0.180	5,100.48		
10,495 lin. ft. 3" C. I. pipe @ 0.160	1,679.20		
225 lin. ft. 4" C. I. hydrant pipe, @ 0.18	40.50		
Total item No. 34	19,875.26	82.14	16,325.54

1694 Item No. 35. Galvanized Iron Street Mains.

220 lin. ft. 2½" galv. iron pipe @ 0.29	63.80		
2,950 lin. ft. 2" galv. iron pipe @ 0.187	551.65		
31,055 lin. ft. 1½" galv. iron pipe @ 0.14	4,347.70		
19,615 lin. ft. 1¼" galv. iron pipe @ 0.127	2,491.11		
4,470 lin. ft. 1" galv. iron pipe @ 0.085	379.95		
7,115 lin. ft. ¾" galv. iron pipe @ 0.057	405.56		
4,060 lin. ft. ½" galv. iron pipe @ 0.045	182.70		
Total item No. 35	8,422.47	75.43	6,353.07

Item No. 36. Laying Galvanized Iron Street Mains.

69,485 lin. ft. galvanized iron mains	5,628.00		
Total Item No. 36	5,628.00	75.44	4,245.76

Valuation of the Property of Bluefield Water Works and Improvement Company.—Continued.

Item No. 37. Extra for Unusual Excavation.

Description.	Cost of reproduction.	Per cent condition.	Present value.
Rock and Shale Trenches.....	7,195.00		
Wet Trenches	366.00		
Under Buildings	5.20		
Total item No. 37.....	7,566.20	87.4	6,612.86

1695 Item No. 38. Steam Railroad Crossings.

Hardy Street near Roanoke Street.	20.00		
Pearis Street Crossing.....	212.00		
Thomas Street Crossing.....	440.00		
Mercer Street Crossing.....	495.00		
Logan Street Crossing.....	520.00		
Total item No. 38.....	1,687.00	82.14	1,385.70

Item No. 39. Street Railroad Crossings.

(*a*) Cast Iron Mains.....	144.00	82.14	118.28
(*b*) Galvanized Iron Mains.....	16.00	75.43	12.07
Total item No. 39.....	160.00		130.35

Item No. 40. Cutting Through Pavements Over Mains.

(*a*) Cast Iron Mains.....	233.00	90	209.70
Total item No. 40.....	233.00		209.70

1696 Item No. 41. Valves on Mains.

199 valves distributed and set....	2,873.23		
Total item No. 41.....	2,873.23	66	1,896.33

Valuation of the Property of Bluefield Water Works and Improvement Company.—Continued.

Item No. 42. Valve Boxes on Mains.

Description.	Cost of reproduction.	Per cent condition.	Present value.
(a) Vaults for Electro-Hydraulic Valves:			
(1) Cor. Pearis & Fourth Streets	50.20		
(2) Cor. Bland & Higginbotham Streets	32.70		
(3) On Princeton Ave. near Giles Street	34.96		
(b) Cast Iron Valve Boxes	423.00		
Total item No. 42	540.86	66	356.97

Item No. 43. Fire Hydrants.

15 4" Eddy hydrants	435.00	66	287.10
Total item No. 43	435.00	66	287.10

1697 Item No. 44. Services & Fittings.

55 1" Mueller Corp. Cocks @ 2.58.	141.50		
2 ¾" " " " @ 1.69.	3.38		
2,201 ½" Mueller Corp. Cocks @ 1.36	2,993.36		
C. I. Fittings	40.00		
Total item No. 44	3,178.64	66	2,119.19

Item No. 45. Meters in Service.

1 4" Gem	175.00
1 2" Neptune (Compound)	55.00
4 1" " @ 16.00	64.00
6 2" Nash @ 55.00	330.00
1 1½" Lambert	30.00
1 ¾" Neptune	12.60
1 1" Keystone	16.00
179 ½" Empire @ 8.40	1,503.60
347 ½" Neptune @ 8.40	4,418.40
8 ½" Crown @ 14.00	112.00
1 1" Lambert	16.00
389 ½" Niagara @ 6.40	2,489.60

Valuation of the Property of Bluefield Water Works and Improvement Company.—Continued.

Description.	Cost of reproduction.	Per cent condition.	Present value.
265 ½" Keystone @ 8.40.....	3,729.60		
12 ½" Hersey @ 7.40.....	88.00		
1 1" Nash	16.00		
100 ½" " @ 8.40.....	840.00		
1 ½" Standard	8.40		
149 ½" Gamon	1,072.80		
Distributing and setting above...	1,467.00		
Total item No. 45.....	16,444.00	65	10,688.60
1698			
Item No. 46. Meter Boxes and Vaults	5,526.94	66	3,647.78
Total item No. 46.....	5,526.94	66	3,647.78
Item No. 47. Twin Tanks.			
Excavation for Site of Tanks....	1,777.80		
Foundation for two Tanks.....	2,362.50		
Material in two Tanks.....	26,539.00		
Piping and Drains:			
Overflow Drain for two Tanks....	52.00		
Overflow for two Tanks.....	396.80		
Washout for two Tanks.....	184.80		
Supply for two Tanks.....	168.40		
Painting	628.00		
Total item No. 47.....	32,109.30	77	24,724.16
Item No. 48. Bland Street Tank.	5,291.00		
Piping and Drains:			
Overflow and Drain.....	188.70		
Piping	765.47		
1699 Total item No. 48.....	6,245.17	53	3,309.94
Item No. 49. Electric Transmission Line	642.20	78	500.92
Total item No. 49.....	642.20		500.92

1700 Case No. 1138.

BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY.

Report of H. E. Nease, Statistician.

Filed March 1st, 1921.

1701 Case No. 1138.

BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY.

This report is made in connection with the application of the Bluefield Water Works and Improvement Company to increase its rates and charges, now pending before the Commission.

Former reports made to the Commission by the undersigned should be considered in connection herewith.

Balance Sheets as of December 31, 1918, 1919 and 1920 as shown by the books and records of the company are as follows:

Balance Sheets.

Assets:	1918.	1919.	1920.
Plant	$309,923.87	$309,168.97	$345,529.11
Storage Lot #3	3,500.00	3,524.94	3,524.94
Inventories—(See detail below)	10,081.55	10,555.90	16,391.08
Total Plant, Etc.	$323,505.42	$323,249.81	$365,445.13
Accounts Receivable	21,067.39	20,711.69	20,213.94
Cash	7,084.97	6,671.86	5,997.02
Liberty Bonds and W. S. Stamps	15,840.00	18,840.00	18,840.00
	$367,497.78	$369,473.36	$410,496.09
Liabilities:			
Capital Stock	$312,000.00	$312,000.00	$347,000.00
Accounts Payable	6,511.43	14,589.64	19,041.60
Profit and Loss	48,986.35	42,883.72	44,454.49
	$367,497.78	$369,473.36	$410,496.09

Detail of "Inventories," 1920.

Inventories:

Auto Truck	$250.00
Atlas	2,359.40
Surveying Instruments	250.80
Laboratory Outfit	410.67
Tools	2,311.07
Meters on Hand	2,712.08
Materials and Supplies	5,513.96
Office Furniture and Fixtures	1,814.38
Investigation New Water Supply	768.72
	$16,391.08

It will be noted that the capital stock was increased $35,000.00 during the year 1920; also, that the plant account was increased approximately $36,000.00.

The investment, as of December 31, 1915, after charging off depreciation, as shown in one of the former reports referred to above, was $324,427.38. The Commission, acting upon this information and other evidence submitted to it fixed the value of the
1702 property for rate making purposes at $360,000.00. From December 31, 1915 to December 31, 1920, approximately $69,000.00 was expended for additions to the properties. During this same period depreciation was charged off amounting to approximately $28,000.00, leaving a net increase of $41,000.00. The investment in the properties on December 31, 1920, as shown by the balance sheet above, was $365,445.13.

Following is a statement of Income and Expenses as shown by the books and records of the company for the years 1918, 1919 and 1920:

Income:

	1918.	1919.	1920.
Water Rents	$57,461.46	$66,396.33	$77,813.53
Turning on Fees	193.50	123.50	110.50
Interest	479.93	1,091.26	1,169.97
Rent, Bailey Farm	60.00	65.00	49.00
Meter Tests	1.50	1.50	.75
Miscellaneous	.....	.....	80.05
Total Income	$58,196.39	$67,677.59	$79,223.80

Expenses:

Pipe Lines	$3,607.07	$4,334.77	$4,533.65
Ada Pump	543.35	957.27	1,416.28
Beaver Pond	10.95	.....	.....
Service Lines	335.72	768.63	1,220.19

	1918.	1919.	1920.
Springs	230.58	316.16	468.31
Office Building	99.98	.....	.....
Meters	908.48	916.07	870.53
Auto Truck	420.07	272.47	577.08
Meter Inspection and Sealing	457.82	543.63	589.08
Purification of Water	396.39	519.27	485.13
Reading Meters	441.65	542.63	544.19
Inspection of Pipe Lines	441.71	499.74	502.48
Engineer and Firemen	2,276.37	4,076.51	5,634.21
Coal	2,124.14	5,131.16	8,321.09
Water Purchased	7,688.19	5,306.43	8,951.54
Salaries—Bluefield	5,433.41	6,208.65	6,963.45
" —Philadelphia	4,800.00	4,800.00	4,800.00
Rent—Philadelphia	400.00	400.00	400.00
Travelling Expense	44.00	.....	222.30
Workmen's Compensation Fund	18.95	33.65	198.94
Rental through N. & W. Tracks	10.00	10.00	10.00
Legal Expense	300.35	225.00	669.40
Donations	.....	.....	100.00
Insurance	208.07	245.84	279.15
Laboratory Expense	4.74	28.45	.....
Plumber's Bonds	20.00	20.00	.....
Office Expense	938.53	850.09	1,343.73
Taxes:			
General Property, W. Va.	3,445.00	5,796.59	6,826.40
License, City of Bluefield	21.00	.....	10.50
Public Service Commission	36.00	38.25	42.50
Capital Stock, W. Va.	240.00	240.00	240.00
" " , U. S.	241.75	218.00	690.00
Special Excise, W. Va.	53.85	117.64	98.06
Income, U. S.	461.10	1,637.49	1,151.56
1703			
Increase Rate Case (20%)	2,657.70	2,894.55	2,910.74
Total Expenses	$39,316.92	$47,948.93	$61,068.49
Net Operating Income	$18,879.47	$19,728.66	$18,155.31

Below is a corrected statement of Income and Expenses. Interest and Rent on Bailey Farm have been eliminated from Income, as shown above.

The Expense item of Water Purchased has been changed, 5¢ per thousand gallons being allowed for water purchased from the Bluefield Valley Water Works Company instead of 6¢ in 1918, 9¢ in 1919 and 12¢ in 1920 as shown in the above statement. This is in accordance with the finding of the Commission in Case No. 59. 128,136,500 gallons of water were purchased during the year 1918, 58,960,380 gallons during 1919 and 74,596,160 gallons during the year 1920.

Salaries and Rent.—Philadelphia office have been reduced from $5,200.00 per year to $1,500.00, for reasons set out in former reports.

U. S. Income Tax has been eliminated and the item Increase Rate Case (20%) has been reduced one half in accordance with the findings of the Commission in the said case No. 59.

Corrected Statement of Income and Expense.

	1918.	1919.	1920.
Income:			
Water Rents	$47,029.53	$50,688.03	$62,153.36
Fire Protection—Private	706.67	890.55	880.00
Municipal Hydrant Rentals	10,000.00	15,000.00	15,000.00
Total	$57,736.20	$66,578.58	$78,033.36
Less Rebates	274.74	182.25	219.83
Total Water Rents	$57,461.46	$66,396.33	$77,813.53
Turning on Fees	193.50	123.50	110.50
Miscellaneous	1.50	1.50	80.80
Total Income	$57,656.46	$66,521.33	$78,004.83
Expenses:			
Pipe Line	$3,607.07	$4,334.77	$4,533.65
Ada Pump	543.35	957.27	1,416.28
Beaver Pond	10.95	.....	.....
Service Lines	335.72	768.63	1,220.19
Springs	230.58	316.16	468.31
Office Building	99.98	.....	.....
Meters	908.48	916.07	870.53
Auto Truck	420.07	272.47	577.08
Meter Inspection and Sealing	457.82	543.63	589.08
Purification of Water	396.39	519.27	485.13
Reading Meters	441.65	542.63	544.19
Inspection of Pipe Lines	441.71	499.74	500.48

	1918.	1919.	1920.
Engineer and Firemen	2,276.37	4,076.51	5,634.21
Coal	2,124.14	5,131.16	8,321.09
1704			
Water Purchased	6,406.82	2,948.02	3,729.81
Salaries—Bluefield	5,433.41	6,208.65	6,963.45
Salaries and Rent—Philadelphia	1,500.00	1,500.00	1,500.00
Travelling Expense	44.00	.....	222.30
Workmen's Compensation Fund	18.95	33.65	198.94
Rental through N. & W. Tracks	10.00	10.00	10.00
Legal Expense	300.35	225.00	669.40
Donations	.....	.....	100.00
Insurance	208.07	245.84	279.15
Laboratory Expense	4.74	28.45	.....
Plumber's Bonds	20.00	20.00	.....
Office Expense	921.11	850.09	1,343.73
Taxes:			
General Property, W. Va.	3,445.00	5,796.59	6,826.40
License, City of Bluefield	21.00	.....	10.50
Public Service Commission	36.00	38.25	42.50
Capital Stock, W. Va.	240.00	240.00	240.00
" " , U. S.	241.75	218.00	680.00
Special Excise, W. Va.	53.85	117.64	98.06
Increase Rate Case (10%)	1,328.85	1,447.28	1,455.37
Total Expenses	$32,528.18	$38,805.77	$49,539.83
Net Operating Income	$25,128.24	$27,715.56	$28,465.00

It is apparent that the charge for Coal for the year 1920 is abnormal. This charge for 1921 in all likelihood will not exceed $5,000.00. On this basis the net earning capacity of the plant, at the present time, is from $31,000.00 to $32,000.00. As a result of the extension of the properties during 1920 there should be a substantial increase in revenues.

Respectfully submitted,

H. E. NEASE,
Statistician.

1705 Case No. 1138.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY.

Application for Authority to Change Rates.

Bluefield, West Virginia, May 20, 1921.

The further hearing in this case is this day resumed, pursuant to agreement of parties.

Present:

The Applicant by A. G. Fox, Attorney, Bluefield, W. Va.
The Protestants, City of Bluefield, by John R. Dillard, City Solicitor, Bluefield, W. Va.
The Public Service Commission of West Virginia, by Commissioner G. R. C. Wiles.
L. W. Stanard, Reporter.

Thereupon the witness L. R. HOWSON was here recalled for further

Direct examination.

By Mr. Fox:

1706 Q. Mr. Howson, at your former examination in this case in Charleston you filed as part of your evidence an exhibit marked for the purpose of identification "Inventory of the Properties of the Bluefield Water Works & Improvement Company, Bluefield, West Virginia, January 1, 1915, Alvord & Burdick", and you stated that this report or inventory was made by Mr. Luce of your office. I will ask you if you participated in the making or compiling of that report?

A. I did, in an advisory capacity. Mr. Luce made the personal listing of the property under my general direction, or under the joint general direction of Mr. Alvord and myself.

Q. I notice in your report upon the valuation of the property filed in this case, that you report a certain amount as going value. Will you please state what that amount is and how you arrive at that item in your valuation?

A. There were two cost or reproduction estimates made in this valuation. One on the pre-war basis and one on present prices basis. On the pre-war the going value was computed to be $53,907.00. This was computed by the method ordinarily known as the comparative method of computing going value.

1707 Q. Is that a proper item, in your opinion, to be taken into consideration in arriving at the value of a public utility for rate making purposes?

A. Yes sir, I think it is.

Cross-examination.

By Mr. Dillard:

Q. Mr. Howson, what do you mean by "going value?"

A. By going value I mean that element of value in a property which is able to earn and is earning, which is in excess of the physical value of the units of the plant. That has and is sometimes defined as the cost of requiring the business,—the development cost. A property which has a going business is worth more than the bare physical cost of the property.

Q. You made two estimates of value for this property, I believe, at the time you compiled these reports?

A. Yes sir, two estimates of the cost of reproduction.

Q. Do you remember those amounts, the totals?

A. Approximately $625,000.00 and $1,150,000.00.

Q. You based the $625,000 approximate estimate upon the pre-war cost of the material making up the physical plant, did you not?

A. Yes sir.

1708 Q. In that cost did you include what would be necessary to expend in reproducing this property by removing and replacing sidewalks and pavements?

A. Yes sir, where such are now laid over the pipes.

Q. Do you remember what your estimate of that cost was?

A. About $27,000.

Q. And in your, in round numbers, $1,000,000 valuation, did you also include that item as an expense or cost?

A. Yes sir.

Q. What was it fixed at?

A. $46,900.00.

Q. Why did you make one greater than the other, Mr. Howson?

A. Because the cost of labor necessary to cut through those pavements and replace them was higher in 1920 than it was in the pre-war period, 1909 to 1914 and 1915.

Q. What is the date of the report you made from which you testified formerly in this case?

A. You refer to this report on value?

Q. Yes sir.

A. That was dated as of July 1, 1920; the valuation was as of July 1, 1920; this was dated December, 1920.

1709 Q. Since the date of that report there has been a downward tendency in the prices of all things which go in that report, has there not?

A. No sir, not in all things.

Q. Well, in what particular has there been any downward trend or tendency in the prices?

A. There has been some reduction in cast iron pipe.

Q. State that reduction please, Mr. Howson, as nearly as you can.

A. It's been $10.00 to $12.00 per ton.

Q. You are familiar with the cast iron pipe price of today, are you?

A. Yes sir.

Q. Then, since July, the date of your report, that has reduced ten or twelve dollars a ton?

A. Yes sir.

Q. What can you say as to labor, has that reduced also?

A. Labor has not had much of a reduction as yet, so far as I can estimate here.

Q. How about labor generally?

A. The character of labor used by this company has not been reduced. Common labor, the country over, has been reduced. However, my inquiries here show that is not the case in this plant.

Q. You mean your inquiries from the officials of this company show that is not the case here?

A. Yes sir, and the common labor in this vicinity.

Q. What per cent has common labor reduced generally?

1710 A. Well, it varies; possibly on an average 20 per cent.

Q. The other things that you estimated that go to make up this physical plant as of July, 1920, have been reduced in the same proportion, have they not?

A. No, some have not, pumping machinery; brick have not been reduced.

Redirect examination.

By Mr. Fox:

Q. Mr. Howson, I believe in setting the value for rate making purposes upon this property you took an average value between the prewar price and the prices as of the time you made your valuation?

A. Yes sir, that is true, for the reason that, as stated in that report, I believe that the prewar cost of production is a minimum measure of value, because I believe that prewar costs will probably never be reached again, and that the costs of July, 1920, represent a maximum measure of the value, beca-se, as stated in that report, I do not believe those costs will maintain continuously. I believe that there will be

1711 a gradual recession from those costs, which recession is now taking place in many items, and that such recession will continue for sometime. The best measure that we know of for determining the probability of that recession is obtained from a study of the prices prior to and subsequent to the Civil War. At the close of the Civil War prices did not drop until 1873, the time of the panic; then they dropped to a new level, which was approximately 60 per cent above what was the prewar level of that time. It is for that reason that, based upon that study, that we have adopted our idea as to the value of this plant as approximately half way between the prewar and 1920 cost of reproduction.

Q. Then, your average of the prewar cost and the cost of 1920, at the time you made your valuation, was made for the special purpose and took care of the very items that Mr. Dillard has mentioned as having decreased in value?

A. Yes sir.

Mr. Dillard:

Q. The Civil War you speak about was confined to the United States, wasn't it?

A. The fighting was confined to the United States; its influence was felt very largely outside the United States.

Q. How do you know that?

1712 A. I know that because of the market situations in Europe.

Q. Do you think that is a criterion by which you could judge the causes or effect of this world war we have just gone through?

A. It is the best one I know of. It has now been two and a half years since the completion or cessation of hostilities and the comparison thus far is very marked.

Q. And I believe you testified after the Civil War the prices continued to increase until 1873, is that correct?

A. Yes sir, until 1872 or 1873,

Q. And prices then were lowered on account of the panic in the United States?

A. Yes sir, the panic was the culmination of that.

Q. The same has not been true since the activities in this war?

A. Somewhat the same situation exists and the difficulties of getting gold is the same now.

Q. But the prices have not continued to increase?

A. Yes sir, cast iron pipe is higher today——

Q. What was that you referred to as having been reduced?

A. The cast iron pipe as of the date of July, 1920.

Q. And prices in the main have had a downward trend since the cessation of hostilities?

1713 A. I think not. The union labor in Chicago was getting 80 cents prior to the war, $1.00 during the war and a year ago it went to $1.25.

Q. And for all building trades throughout the country the two years after the war saw the peak, did it not?

A The Civil War was extended over a longer period of time.

Q. And how are you able to compare the one with the other?

A. Cutting out the peak of 1920 we are right now practically at the same percentage above prewar costs as in the Civil War, three years after it quit; we have come back, went quite violently above that.

Q. How do you reconcile that with the situation in the Civil War?

A. I think one peak of a few months does not affect a general study extending over several years.

Q. Did you have any peaks of that character after the civil war?

A. The data I have subsequent to the civil war have been averaged out in years.

Q. Isn't it true that you just submitted or formulated a theory by which you arrive at one estimate of $625,000 and $1,000,000

1714 for the other one arbitrarily?

A. No sir.

Q. And isn't it purely guess work on your part as the representa-

tive of the Bluefield Water Works & Improvement Company in fixing that valuation?

A. No sir, it is not guess work. It is the best forecast I am able to make.

Q. You are employed by the Bluefield Water Works & Improvement Company to make these reports, were you not?

A. Yes sir.

Q. And paid to do that?

A. Yes sir.

Q. Paid to represent them in testifying in this case?

A. Yes sir.

Q. How much do you receive for your services in producing this testimony before this Commission?

A. I am employed on a per diem basis, that we are performing these services.

Q. How much has it aggregated so far?

A. Probably on this case and the preparation of these reports, I think no bill has been rendered, and I would have to give you limits, possibly $1,000 or $1,500.00.

The witness is excused.

1715 Thereupon came WILLIAM Q. GALLAHER, a witness of lawful age, who, being first duly sworn, testified as follows:

Direct examination.

By Mr. Fox:

Q. Mr. Gallaher, what position do you hold?

A. I am Chief Engineer of the Public Service Commission.

Q. At the time and at the direction of the Public Service Commission, I believe you made up and submitted a report on the valuation of the Bluefield Water Works & Improvement Company?

A. Yes sir.

Q. That report was dated as of December 31, 1920?

A. Yes sir.

Q. That was made up under the directions and instructions of the Public Service Commission?

A. It was made at their suggestion.

Q. Was it at their suggestion you used the prewar prices as your method of valuation?

A. Yes sir, plus the actual gross investment since that time.

Q. Then, your report shows the investment prior to 1915, estimated as of a prewar or past cost estimate?

1715½ A. It is on a reproduction basis, not the investment.

Q. And that is based on the unit prices before the war, in 1914?

A. Yes sir.

Q. You did not compute or estimate the value of this plant as of the values existing at the time the report was made up?

A. No sir.

Q. The prewar prices as taken by you as the unit of value in this case would not represent what it would have actually cost at the time you made your report to reproduce this plant?

A. No sir.

Q. How much more would it have cost to reproduce this plant as of December 31, 1920, than as of December 31, 1913, approximately?

A. I expect it would cost twice as much, pretty close — it. That is very general, however.

Q. But the prices prevailing in 1920 and 1921 were approximately twice as high as those in 1914?

A. Yes sir.

Q. And no consideration was made of this increase in prices in your valuation?

A. Only as that was reflected in the book items since 1915.

Q. I notice by your report, Mr. Gallaher, you did not make any estimate of Going Value or add that to your valuation?

1716 A. No, nothing of an intangible nature.

Q. Has that been your practice or not, to omit going value from the totals?

A. It has been, yes sir. Not, however, that I don't think a utility is not entitled to a going value, but that is left to the Commission.

Q. You believe that is a proper item of valuation, but you did not place a value on that one item?

A. Yes sir.

Q. In other words, that one item is included as a proper item of valuation, but the determination of the amount is left to the Commission?

A. Yes sir.

Q. I notice you list no labor or water rights, that is intangible, also?

A. Yes sir.

Q. You listed operating capital as an item of capital, but placed no valuation upon that. Is that also a proper item to be considered?

A. Yes sir.

Q. About what proportion have you used in arriving at operating capital to the total value of the plant in other estimates?

A. In this particular case I based it at 25 per cent of the annual operating expenses, which was $58,500.00.

1717 Q. That, then, is your opinion the proper amount that should be allowed?

A. Yes sir.

Commissioner Wiles:

Q. That includes working cash capital and stores and supplies?

A. Yes sir.

Mr. Fox:

Q. Mr. Gallaher, did you estimate what should be allowed as going value?

A. I made no estimate.

Q. Do you know what per cent is usually allowed?

A. I think no particular per cent. It is a separate status in each case. Quite frequently, however, they use 10 per cent.

Q. In Item No. 8 of your report, how did you arrive at the cost of the pipe from the gravity springs to the city?

A. As shown at $24.41?

Q. Yes sir.

A. That was the price per ton. That was estimated as being representative of the price prevailing over that period of years.

Q. How did you arrive at the cost of laying that pipe, Mr. Gallaher?

A. From completed work estimates of different companies making these estimates, adapted to local conditions.

1718 Q. You made no investigation of the peculiar factors surrounding the laying of those pipe lines to Bluefield?

A. I considered the unusual excavations.

Q. Now, in Item No. 9, how did you arrive at the cost of laying that pipe from Ada Springs to the city?

A. The same manner in which I arrived at that from the Gravity Springs.

Q. Isn't it true you make that $1.00 less than the actual laying of pipe in the city, the actual cost of pipe in the city, per ton?

A. You mean in the cost of the pipe or the actual cost of laying?

Q. In the actual cost of the pipe?

A. I don't think so.

Q. As compared with Item 32, Mr. Gallaher, Mr. Gallaher, to make that question a little clearer, is not the cost as set out by you of the pipe distributed at the trench in the pipe line from the gravity springs and Ada springs to the city $1.00 less than it is distributed to the city in the trench itself?

A. No, the prices are more for the lines from the springs.

Q. Now, I am referrring to the pipe——

A. Yes sir, I am referring to pipe; I have a unit cost here.

1719 figured at $26.06 for the line from the gravity springs and $25.40 for the city.

Q. That was for a small pipe, wasn't it?

A. I am speaking of 6 inch and larger. I have $26.06 for the large pipe on the lines from the gravity springs and $25.40 for the large pipe in the city.

Q. Well, isn't it true, Mr. Gallaher, that the distribution of the pipe to the trench in the city would be cheaper than the distribution of pipe to the trench in outside lines?

A. Yes sir, we have made a difference there in the hauling; on the lines from the springs I allowed a hauling charge of $1.50 a ton, and in the city 75 cents a ton.

Q. Then, I understood you to say you had made a difference of between $25.00 and $26.00 on outside price in the pipe in the city and the outside line?

A. Well, that cost of the pipe included the pipe distributed.

Q. Mr. Gallaher, on page 19 of your report you list 1,064.8 tons of pipe at $24.41 per ton. Now, what size pipe does that include?

A. That price of cast iron pipe I used there was 4 inches and under. You are speaking of Item 8 I believe.

Q. I am speaking of Item 9, page 19.

A. That is 6 inch and over at $24.41 and under 6 inch is $26.06.

1720 Q. That is 4 inch and under $26.06?

A. Yes sir.

Q. Then, on page 31 of this report, Item No. 32, you list 1,271.8 tons of 5" to 10" at $32,303.72, that is $25.40 per ton, isn't it?

A. Yes sir.

Q. That is cast iron street mains, I believe?

A. Yes sir, the H. & S. pipe.

Q. I believe you stated the cost of the distribution was 75 cents less in the city than in the outlying pipe lines?

A. I will correct that statement of mine I have heretofore made. We usually include that in the laying.

Q. Mr. Gallaher, I call your attention to Item No. 35 of your report, and ask if you included in that item the five and a half miles of pipe laid in the past five years?

A. No sir, that was included in the book additions.

Q. Whereabouts in your book additions does that appear, Mr. Gallaher? Will you point it out please?

A. It shows $22,639.00 being credited to the mains of 1920, and I presume this doesn't itemize this particular line.

Q. Then, the same thing applies to Items 37, 38, 39, 40, 41 and 42, you omit from the cost of reproduction the additions

1721 made in the last five years and you include those in your book value?

A. These quantities shown in these items are shown in the inventory as of December, 1915.

Q. Are they included under Items 32 and 34 of your cost of reproduction under the head of "additions"?

A. No, none of the items I have included here are included in book additions.

Q. Was not all the items to the distribution system grouped under Item 32, Cast Iron Street Main, and Item 34, Laying Cast Iron Street Mains", in your revaluation,—reproduction valuation?

A. Yes sir, laying mains, materials and supplies, they are all included under item of "Mains" and amounts to $36,000.

Q. In Item No. 23, Station Miscellaneous, I will ask if you took into consideration the venturia meter at the station under "additions?"

A. I did, if it is included in the statement furnished me of additions.

Q. Under what item of your report would that be shown, if it is shown, Mr. Gallaher?

A. Materials, Supplies, Tools, Equipment, etc.

Q. My reason for asking that question, Mr. Gallaher, is that I

found under "Station Miscellaneous" no additions listed in your cost of reproduction.

A. That was because it was listed under here.

1722 Q. Under Item 18 of your report there is a difference between your value and Mr. Alvord's. Did you give any value to the extra setting there for the boiler?

A. Yes sir.

Q. You added that value in?

A. Yes sir. You understand I used identically on those, in my reproduction value, the same figures as Mr. Alvord.

Q. Mr. Gallaher, in your report you make no estimate of the overheads, I believe?

A. I do.

Q. What per cent do you allow for engineering?

A. Four per cent for engineering and superintendence.

Q. And what per cent for contingencies?

A. One and one-half per cent.

Q. That would be based upon 4 per cent of the total value after including going value and the other intangible quantities you have omitted estimating on?

A. No, not on going value.

Q. What would that 4 per cent be based upon?

A. On merely the items I show here.

Q. The actual physical valuation as shown there?

A. Yes sir.

1723 Cross-examination.

By Mr. Dillard:

Q. Mr. Gallaher, do you assume that the unit quantities fixed by Alvord and Burdick were correct in your report, did you?

A. As far as possible I checked that; that is the company provided me with a map showing the locations of all their mains and to verify those figures I scaled them and they checked reasonably close, I think within 2 per cent of the quantities shown on Mr. Alvord's report, and then by actual physical inspection I checked the major items.

Q. And before you made your report you asked the company for the additions made to the plant, the actual gross investments which conform to those Mr. Nease got in his office, and from the information furnished you by the company and the investigation you made personally, you made a report of what you thought as an engineer, was a fair valuation of this property for rate making purposes?

A. Yes sir, as of the particular period I took it over.

Q. What was that total you fixed it at, Mr. Gallaher?

A. $397,964.38.

Q. Did you make a physical examination of the plant of
1724 the water works company, its pumping station, etc.

A. Yes sir.

Q. What would you say as an engineer, Mr. Gallaher, about the

necessity of the Bluefield Water Works & Improvemet Company providing itself with an auxiliary or second unit at these plants in order to furnish water to the citizens of the City of Bluefield and the inhabitants of Bluefield for domestic and fire fighting purposes?

A. I think it is more essential to get water from the pumping station they have.

Q. Do you know of an occasion in which one of the pumping stations became inactive by reason of the machinery breaking down?

A. Yes sir.

Q. If they had had an auxiliary or a second unit they could have furnished water then, could they not?

A. Yes sir, but in this particular case I understand the gravity springs will furnish water to some extent.

Q. Will it furnish water to the extent the public demands?

A. No, I guess not.

Q. Have they a sufficient supply of water to furnish the citizens of Bluefield at all times?

A. I think not.

1725 Q. What should the water company do in order to put itself in position to do that, in your opinion?

A. I think the most feasible thing it could do would be to possibly impound the water near Ada spring.

Q. Could that be done, do you think, from your examination?

A. At right much of an investment, yes, sir.

Q. In the event they would do that, Mr. Gallaher, then would it be necessary to have the auxiliary or second unit?

A. Yes, sir, in order to meet with any break down in the present unit they might have.

Q. Can you state a method by which they could impound this water so as to insure the inhabitants of Bluefield water for all purposes at all times, without the second or auxiliary unit?

A. No, sir.

Q. Then, don't you think, as a matter of fact the second or auxiliary unit is necessary

A. I don't think that is the worst situation. I think that the people of Bluefield would be out of water possibly more due to insufficient supply than due to break downs in the present station.

Q. I will ask you now to state what, in your opinion, is necessary for this company to do in order to be ready at all times to furnish Bluefield and her inhabitants with an adequate supply of water?

1726 A. It would be necessary to install break down stand-by plant, and also to get additional water.

Q. Have you figured, Mr. Gallaher, the cost of that installation to the company?

A. No, sir, I have not.

Q. That is feasible, though, and could be done, and you think it is necessary to be done in order to furnish the city an adequate supply of water at all times?

A. I think to make the situation ideal that would be the only solution.

Q. Don't you think that is necessary as a practical proposition?
A. I don't know whether it is practical or not. It would be dependent upon how much money the company has.
Q. The water is absolutely essential, isn't it?
A. Yes, sir.
Q. And an adequate supply is necessary?
A. Yes, sir, if they are to have 100 per cent service.
Q. Then, if you think it is feasible, don't you think the company should do that?
A. I don't know about that.
Q. What supply do you think we have here, 50 per cent?
A. Yes, sir.
1727 Q. You think we have a 50 per cent supply in dry seasons and low water periods?
A. I understand the condition that was met with here last fall was unusual. Last fall as I understand it was very dry and I understand that hasn't occurred very much in the past.
Q. You have no assurance we won't have a repetition of that this fall, do you?
A. No, sir.
Q. Did you make an examination of the tank on the hill on Bland Street?
A. Yes, sir.
Q. I call your attention to a stream that usually flows from that tank down Federal Street. Did you examine that?
A. At the time I made the examination I couldn't find the stream.
Q. Have you looked for it except on that one occasion?
A. I saw signs of there having been water there,—a dry channel,—but at that particular time there was no water.
Q. Did you ascertain where that water came from, Mr. Gallaher?
A. No, sir, I couldn't see where it came from.

1728 Redirect examination.

By Mr. Fox:

Q. Mr. Gallaher, I believe you state that, in your opinion, the great need is for an increase in the water supply?
A. Yes, sir.
Q. I believe you stated also that would involve considerable investment?
A. Yes, sir.
Q. Have you made any estimate at all of the investment that would be required?
A. No, sir, I have not.
Q. An increase in investment in this case would call for an increase in rate, would it not?
A. Yes, sir.

Recross-examination.

By Mr. Dillard:

Q. You think, Mr. Gallaher, as an expert, a company that is rendering service should be paid the same compensation on the 50 per cent service it is rendering as if rendering 100 per cent service?

A. It is not for me to say whether they should be allowed a rate on projected improvements.

Q. But if the company is only rendering 50 per cent service now, don't you think they should only charge on the basis of the
1729 50 per cent service they are rendering?

A. Well, if the local operating conditions were not high that probably would be right.

Q. Suppose this company were furnishing water to its patrons one-fourth of the time and only one-fourth of the time, would they be entitled to the same compensation on the investment as if they were furnishing water all the time?

A. Well, if the investments were the same; if the local conditions were such that was the best they could do.

Q. Don't you know of water companies giving better service than this company that are not getting the same rates?

A. I don't know of any companies comparable with this one in their supply.

Q. Why?

A. Due to local conditions.

Q. Due to the fact they are not furnishing the water?

A. Due to the fact there is no water to furnish.

Q. You stated they could obtain that water, this company could?

A. Yes, sir, by a large investment.

Q. Don't you think they should be required to make the investment before they should get paid for it?

A. That is not for me to decide. There is no question
1730 if they could give the service they would be entitled to more money.

Q. You don't know how much service they are rendering now?

A. No, sir, I haven't made a detail statement of that.

The witness is excused.

Thereupon came W. B. HALL, a witness of lawful age, who, being first duly sworn, testified as follows:

Direct examination.

By Mr. Dillard:

Q. Mr. Hall, what is your occupation and vocation?

A. Assistant Engineer of the Public Service Commission of West Virginia.

Q. What experience have you had as an engineer, Mr. Hall?

A. I have had twelve years practical experience and two and a half years with the United States Army Engineers.

Q. How long have you been with the Public Service Commission?

1731 A. Since February 1, 1920.

Q. Did you have occasion to visit Bluefield in the fall of 1920, when the water supply was extremely low?

A. Yes sir.

Q. Can you state what was the cause of the low supply at that time?

A. There was two causes: One was from the break down in the motor, and the other cause was from the failure of the water from the springs to furnish an adequate supply.

Q. What can you say as an engineer and your investigation of the Bluefield Water Works & Improvement Company as to the necessity for an auxiliary or second unit at the pumping stations to bring the water to the tank or the receptacle at Bluefield?

A. The second unit is necessary at each pumping station, unless a large reservoir was built above the elevation to the highest consumer in the town, in which case the storage capacity would be large enough and I don't think the second unit would be necessary.

Q. From your examination of this plant and the springs, state what, in your opinion, is necessary to be done by the applicant company to furnish an adequate supply of water to the patrons

1732 of the Bluefield Water Works & Improvement Company at all times?

A. I haven't gone into the territory far enough to make a statement as to that. You may be able to sink wells or sink springs that would give an adequate supply. Mr. McCarthy has very complete information on the supply of water and I didn't go into that and investigate it.

Q. Well, from what you saw and the investigation you made, have you any idea what could or should be done along that line?

A. If you are going to increase your supply, that can be done by the large reservoir or it might be done by wells; I don't know what the conditions are.

Q. Well, if that were done or accomplished that supply would have to be placed on a higher altitude than the points of the services, unless you had the additional duplicate unit?

A. Yes sir.

Cross-examination.

By Mr. Fox:

Q. Mr. Hall, did you make any investigation of what those additional pumping units would cost?

A. I made no thorough investigation, no sir. Together with Mr. Markle an estimate was made of what it would cost to install

1733 an electric pump at the Ada spring, but a thorough investigation was not made.

A. That investigation was made in regard to a centrifugal pump, was it not?

A. Yes sir.

Q. How would you handle that pump on a short supply of water?

A. By creating a dam below the Ada spring.

Q. Then, in order to put in an electrical pump at this plant as an auxiliary, you would have to have a storage supply there for that pump to pump, wouldn't you?

A. Yes sir, in order to give an adequate supply, but in the case of fire you could give the supply of water which you now have, if you had an electric pump.

Q. About what capacity pump would you put in, Mr. Hall,—would you recommend putting in there,—what capacity per minute?

A. That would depend very largely on what the future improvements of the company would be.

Q. Suppose that pump has a capacity of 1,000 gallons a minute, and the other pump broke down, and during a dry season, and a capacity of 500,000 gallons how would you handle that?

A. The only way would be to impound the water,—have a storage supply of water.

Q. Then, the only feasible method by which a centrifugal
1734 pump there could be handled would be to have a storage supply of water there?

A. Have a small tank there and run it at intervals.

Q. That would be a supply, wouldn't it?

A. Yes sir, but not a reservoir supply.

Q. That would be an intermittent service.

A. I should think it would hold in dry spells, if you had the tanks on top of the hill.

Mr. Dillard:

Q. An intermittent service would be better than no service, wouldn't it, Mr. Hall?

A. I think so.

Mr. Fox:

Q. From the standpoint of an investment and economy, as an engineer, would you advise putting in a centrifugal pump in this plant, without providing at the same time for an adequate storage of water in case of dry weather?

A. I would.

Q. You don't know what the cost of that would be?

A. No sir.

The witness is excused.

1735 Thereupon came H. E. NEASE, a witness of lawful age, who, being first duly sworn, testified as follows:

Direct examination.

By Mr. Fox:

Q. Mr. Nease I believe you are the Statistician of the Commission?

A. I am.

Q. And you filed a report in this case as of date of March 1, 1921?

A. I did.

Q. This report is made from the balance sheets of the Bluefield Water Works & Improvement Company, I believe, from their books?

A. Yes sir.

Q. I notice on page 1 of your report, beginning of the page, you show the investment as of December 31, 1915, at $324,000, in round numbers, after charging off depreciation. What amount was charged off for depreciation at that time? (That is found near the bottom of the page.)

A. $83,455.19.

Q. Upon what was that deduction for depreciation based?

A. That was the depreciation set up on the books of the company by the company's officials. I don't think I would be in posi-

1736 tion to state what the basis was.

Q. That was found on the books charged off at one time, I believe, wasn't it, Mr. Nease?

A. I wouldn't be in position to answer that now. It is rather ancient history. The investigation was made in connection with a report which was made away back there.

Q. That $83,000 charged off for depreciation at that time would not represent 2 per cent depreciation charged off each year upon the value of the plant during that year, would it?

A. This amount represents the accrued depreciation to that date as made up by the company officials. Now, as to the method used by the company I wouldn't be in position to state at this time. I think I would have among my old working papers used in connection with this report in 1917 that data.

Q. In other words, if that amount had been shown on the books as $160,000 accrued depreciation as of that date, you would have put that in as the depreciation?

A. Yes sir, I would.

Q. And if that depreciation had been charged on the books at $10,000 you would have also put it in at that?

A. I would.

1736½ Q. Since that time and in your last report, you report $28,000 as depreciation I believe in the last five years?

A. Yes sir.

Q. That makes a total depreciation, according to your report, of how much upon the value of the plant?

A. That would be approximately $111,000.

Q. Then, that $111,000 charged against the book value of the

plant does not represent the actual depreciation. It represents what was found on the books as charged as depreciation?

A. I am not in position to state whether it is actual or not. That is an enginering proposition wholly. It is presumed to be the proper amount of depreciation; at any rate it was the amount determined by the officials of the company.

Q. In other words, that depreciation was based upon that charge found in the books, and you made no estimate of the value of the plant year by year, deducted by that for depreciation?

A. I don't recall that I made any such statement or filed an exhibit covering such.

Q. Such conclusion is not contained in the report which you have under consideration?

A. If any such statement was made by me it is a matter of record in the former case; I am not in position to state whether that
1737 statement was made. Now, it rather occurs to me I may have done that; I do very frequently in rate cases.

Q. Your report shows depreciation considerably higher than the depreciation charged by your engineer, but your depreciation for the last five years is the same as that charged by the engineer. Does that refresh your memory as to where you got the $83,000 charged off in your first report?

A. As I have stated, the $83,000 was taken from the books and records of the company, which was the amount they set up and not the amount I arrived at by any calculation of my own.

Q. Your report also shows no appreciation?

A. It does not. Had it shown such or had the books and records shown such, I would have eliminated such and have made a note of the fact.

Q. In other words, your report would show depreciation if so listed but would not show appreciation?

A. Yes sir, if appreciation were shown on the books it would be deducted and eliminated as not a part of the book cost.

Q. I notice also in your report, Mr. Nease, that the expense of water purchased has been changed and only 5 cents per thousand gallons allowed for the water purchased from the Bluefield
1738 Valley Water Works Company. I will ask you what the books show as having been actually paid for that water for the years 1918 and 1920?

A. Six cents for 1918 and 9 cents for 1919 and 12 cents for 1920.

Q. That is what the books showed had actually been paid for the water purchased from this company?

A. Yes sir, to the company from whom the water was purchased, which is understood to be an affiliated company of this company, the stock of which is owned by this company.

Q. According to the former holding of this Commission the Bluefield Valley Water Works Company is entitled to a return upon its investment of $25,000 and the actual cost of supplying this water, plus cost of operation, I believe, is that correct?

A. Why, the Commission, I think, held substantially that. How-

ever, I might state notwithstanding that the Statistician had other views, and so stated those views in the report filed.

Q. Well, 5 cents per thousand gallons of water purchased would represent what return upon the $25,000 invested in this company?

A. That is a matter of calculation. I don't think I have the necessary data to enable me to answer the question.

Q. Well, to the actual cost of this water should be added a
1739 return upon the investment, is that right, 8 per cent?

A. If that is adopted as the correct theory of measuring that service. I don't think it is the correct theory of measuring the service, for the reason it would be based wholly on the quantity of water furnished, and if for any one year the quantity of water was twice as much as some other year, the rate which would be charged would be very materially different, and it would seem to me basicly wrong to charge the water in the way you have suggested as the proper basis. That was indicated by the Commission; the Commission rather indicated that, but in a later finding the confined the charge to 5 cents, when the books showed it actually to have been 6 cents. They, in other words, conformed to their first finding of 5 cents as being the proper charge. I doubt whether it was the intention of the Commission to embody in its findings that the water should be charged on the basis you have suggested, for the reason I have given. It will be noted here there was more than twice the quantity of water furnished in 1918 than was furnished in 1919 and, as I stated, the quantity of water furnished would so materially affect the price at which it would be charged, that it would jump from one figure to another every year, and it might be up one
1740 year and down the next, if that method was followed, so it would be better to arrive at the cost of that service rather than the cost for any particular year. I have no way of knowing how the demand was made or came about as to why the company purchased 128 million gallons in 1918 and only 58 million gallons in 1919 and 74 million gallons in 1920, but you can readily see if the quantity of water taken from the Bluefield Valley Water Works Company would determine the price, the price would fluctuate from year to year and wouldn't be constant or fixed and wouldn't represent the value of the service.

Q. Well, then, the amount paid for this water should be based upon the cost of supplying the water purchased from this company, is that correct?

A. Well, based over a period of time which would fairly represent the value of the service.

Q. You are not prepared to state 5 cents per thousand gallons actually represents the value of this service?

A. It would so represent the value of the service the first year furnished as represented by the books of the company.

Q. But you do not know about that value since or the cost of supplying it?

A. No sir; I don't know that I made myself clear, but the
1741 point is that the Bluefield Valley Water Works Company don't render equivalent service year after year, and since it

doesn't render equivalent service it would appear the basis for any fixed year would not be, the charge for any fixed year would not be fair and equitable.

Q. Then, the inequity which consists in the amount charged for the water, would that not be eliminated by considering the Bluefield Valley Water Works Company as a component part of this company, and basing these rates upon the actual investment plus cost of operation?

A. That was my suggestion in the report I finally filed. That would take care, then, of any duplication in charges between companies which should be eliminated, and would also take care of this fluctuation in demand and supply.

Q. Then, this Bluefield Valley Water Works should be added to the total value of the plant to equitably fix the rates for this company?

A. Yes sir, I think so.

Q. This Bluefield Valley Water Works Company is more or less an auxiliary plant, isn't it?

A. I so understand.

Q. And used to supply shortage in demands from the other plant, in some measure?

A. I am not advised as to the extent to which it is used. I understand it is purely an auxiliary plant, but as to the extent it

1742 is used I am not advised.

Q. But, granting it is used and useful to the Bluefield Water Works & Improvement Company in the service to the public, and as an auxiliary plant, and suppose that for a period of six months this plant is not needed at all, or for a part of a year it is not needed at all, then it would be needed for another year or part of a year to supply a shortage, would not the fair and equitable way to include this in the total value of the plant be to consider it as a part of the cost in the total value and base the rates on that?

A. That is the theory I tried to impress on counsel as being the proper one, for the very reason you mention. We might assume that in some particular period or year you would only require 10,000 gallons and under your plan of charging so much a thousand you would have to charge an exorbitant rate.

Q. But that would represent the actual cost to us of furnishing the 10,000 gallons, based upon the cost of operation?

A. The question would arise as to whether or not you were taking all the water or to the best advantage.

1743 Q. This cost is paid directly by the company to this Bluefield Valley Water Works Company, is it not?

A. It is charged on the books in that way, because I understand the books are kept by the same people, the plants run jointly. This Bluefield Valley Water Works Company is run exclusively for the benefit of the Bluefield Water Works & Improvement Company and has no other customer in the market.

Q. I notice, also, Mr. Nease, that you state on the last page of this report that it is apparent that the charge for coal for the year 1920 is abnormal, and for 1921 it will probably not exceed $5,000. I will

ask you if you investigated the cost of coal at the mine at the present time?

A. I did not investigate the cost of coal in this field. I have a general knowledge, I might state, of the trend of the coal market throughout the country. I might state in confirmation of my statement that I had a letter from Mr. Workman, the President of this company, in a way criticising this report, in which he agreed with me that the charge was abnormally high and that he hoped it would be much less.

Q. If it is true, Mr. Nease, that we have actually contracted for coal for the following year at this time and were compelled
1744 to pay $3.50 for that coal at the mine, then that statement as to the charge for coal during the coming year being materially less would not apply, would it?

A. That would depend whether you paid $3.50 for coal during the period which this report covers. It would depend altogether on what you paid for coal during 1920.

Q. Then, that statement in your report is based entirely upon what the coal would actually cost for this year, and if they have actually bought their coal and paid for it that would throw light on this statement?

A. It would in comparison with what you paid in 1920. You will note in 1918 you only paid $2,124.00 for coal and in 1919, which was fairly representative, you paid $5,131.00; in 1920 it jumped to $8,321.00, and knowing the conditions as I did of the coal market, not only as affecting your utility but practically every utility in the state, that charge for fuel in 1920 was abnormal.

Q. How many tons were used during 1920?

A. I don't know, sir. That is a matter that can be very readily cleared up by your own witnesses by the actual facts.

Q. The actual facts would determine that?

A. Yes sir.

1745 Q. And would also determine whether the $5,000 estimated by you was proper or not?

A. Yes sir, it would clearly settle the matter as to what you did do.

Q. I notice also in your report you state as the result of extensions of the property during 1920 there should be a substantial increase in revenue. Will you please state just what is meant by that statement?

A. It is always presumed that a utility, unless under duress or orders which it is unable to control, would not make improvements in its property unless it expected additional revenue from such extensions.

Q. The greater part of the improvements and extensions were made under order of the Commission at the instance of the City of Bluefield, were they not?

A. I believe that is true, but it was an extension of service I believe.

Q. If $40,000 was invested in these extensions, what increase in revenue should we expect from that?

A. An increase commensurate with the increased investment.

Q. Suppose it should be shown here, Mr. Nease, a large part of these extensions were demanded by the residents of the city

1746 of Bluefield, in which were made for the purpose of fire protection, and that there has been a very few of these people as a result of these extensions have been added to the consumers, then that statement would not be borne out by the evidence, would it?

A. No, under the local conditions you speak of would naturally affect the situation.

Q. And under the present conditions the Bluefield Water Works & Improvement Company would receive no additional compensation for having furnished fire protection to this section where these extensions were made?

A. I am not advised as to that.

Q. You don't know the ruling of the Commission on that?

A. No sir.

The witness is excused.

Thereupon the hearing is adjourned to two o'clock P. M. of this day.

1747 Afternoon Session.

Friday, May 20th, 1921.

Present: Same parties.

Thereupon the witness A. L. RHODES, a witness heretofore sworn and examined in this case, was here recalled for further

Direct examination.

By Mr. Fox:

Q. You have testified in this case before?

A. Yes sir.

Q. You are familiar with the extensions added to the distribution lines of the Bluefield Water Works & Improvement Company in the last several years, are you not?

A. Well, I can't say as to all of them, but generally I am I believe.

Q. You are familiar wth the territory supplied by the extension built on the Bramwell road, are you not?

A. I am.

Q. Have you prepared a list of the consumers who have been added to the company since that extension was put in up to the first of the year?

A. I have.

1748 Q. Does that list show the name of the consumer, where he is located, and the amount collected from him to the first of the year for water service?

A. It shows all of which you have mentioned. It shows the amount each tap has earned; I don't know as they collected to the first of the year that much, but that much was earned to the first of the year.

Q. I will hand you a list marked for identification "Rhodes Exhibit No. 1" and ask you if this is the list to which you refer?

A. It is.

Q. I will now ask you to file that as part of your evidence in this case.

A. I will. (The same is accordingly filed.) I might state also that was one tap, a temporary tap and shows the largest amount on this statement, $39.05.

Q. That is a tap of the B. & B. Lumber Company?

A. Yes sir.

Q. The amount collected from them was $39.05?

A. Yes sir, that was only a temporary line put in for a saw-mill.

Q. This statement shows the total amount earned inside the corporation from these extensions is $122.30, is that correct?

A. Yes sir. Well, that is $128.76 inside the corporation and $12.00 outside the corporation.

Q. That is is all the revenue that has been derived from
1749 that extension of $40,000 put in last year, is that correct?

A. Yes sir.

Cross-examination.

By Mr. Dillard:

Q. When did you complete this line, Mr. Rhodes?

A. Well, I don't remember just the exact date. They are making some extensions out there now, or about to make some extensions. This statement is until the end of the year.

Q. You never have completed it, then, have you?

A. Yes sir.

Q. Well, when did you complete it?

A. Along in the fall some time; I don't know the exact date.

Q. How long before the first of the year?

A. Well, I can't just say.

Q. How many extensions has been added since the first of the year in that section?

A. Oh, there might have been just a small piece of pipe laid further on outside the incorporation.

Q. How many taps have been made inside the corporation since the first of the year?

A. I can't tell you that without referring to the record.

Q. Why didn't you bring your whole record up here before the Commission?

1750 A. I can bring it.

Q. Have you any reason to assign why you fix it to the first of the year and not since the first of the year?

A. This statement just covers that $40,000 extension Mr. Fox refers to.

Q. But you testified these taps were added after you put this $40,000 expenditure down there up until the first of the year. Now, you say you don't know how many was added since the first of the year.

A. I can get that if you wish it.

Q. Why didn't you bring it here today?

A. We can get it.

Q. Did you understand the question, Mr. Rhodes?

A. Let me have the question again.

Commissioner Wiles: What Judge Dillard wants is what taps have been made upon this $40,000 extension since the first of the year, as I understood the question.

A. Well, there has been a few more made, Judge, but I can't say at this time. I can get this information in a few minutes.

Mr. Dillard:

Q. You don't know what time last year you completed the line so these parties could take water, do you?

A. No, it was laid in the fall, Mr. Dillard.

1751 Q. This statement you filed as to taps both in and outside the incorporation on this $40,000 extension, that is the only one you testified about, is it?

A. Yes sir.

Q. It shows the return to your company for one month only, doesn't it?

A. No, that shows the return from the time these taps were made until the end of the year 1920.

Q. Well, you are still getting a return on that for each month, aren't you?

A. Yes sir, this report was filed or made up as of December 31st.

Q. Well, what is your revenue from this line that you testify about monthly at the present time?

A. One dollar per month per tap is the minimum; I can't say offhand what it is.

Q. You did file this statement before the Commission to show you got $140.76 from this installation of $40,000 of line?

A. Yes sir.

Q. And that doesn't show all the revenue received from that line, does it?

A. Up to the first of the year, yes sir.

Q. Do you know how much you are getting now per month from that extension?

A. No sir.

1752 Q. The last item on here 2991, C. S. Duncan, Bramwell Road, 12-3-20?

A. Yes sir.

Q. When was that tap installed?

A. That was the date.

Q. Well, that was the 3rd day of December, 1920?
A. Yes sir.
Q. You didn't have quite a month to collect on that and have been collecting ever since, haven't you?
A. There has been amounts accrued; I don't know how much has been collected.
Q. Well, you have been receiving something or should have since that time?
A. Yes sir.
Q. And you had that installed one month before the end of the year?
A. Well, we figure on these taps on a monthly basis; I filed this report as of December 3, 1920.
Q. Why did you do that?
A. I thought that was up to the time this case covered.
Q. Then, you can't tell the Commission what revenue you are receiving at the present time from that extension?
A. I can get that.

Mr. Dillard: I would like to have that furnished, your Honor.
Commissioner Wiles: He can furnish that later.

1753 Mr. Fox:

Q. Mr. Rhodes, how many houses are along this extension?
A. I counted 88 houses to the best of my ability.
Q. Eighty-eight houses that would be supplied from that extension inside and out side the corporation at the present time,—that is on the Bramwell road?
A. No, that also includes the lots back there,—street back there, Harry Street, I believe, that is, on the Bramwell extension.

Mr. Dillard:

Q. When did you count these houses?
A. A few days ago.
Q. Why didn't you make this statement up until the time you got this other information?
A. Well, I can give you the statement as of December 31st, if you care to have that. December 31st. the best information I could obtain, there was 57 houses at that time.
Q. I asked if you counted these houses a few days ago for the purpose of testifying, why you didn't give this Commission the information about the revenue from that extension?
A. I don't see any particular reason.

Mr. Fox:

Q. Wasn't it a fact this statement was made up until the
1754 first of the year because all your other statements were filed and made up to the first of the year?
A. That was my information, yes sir.

The witness is excused.

Thereupon the witness WILLIAM MCCARTHY, a witness heretofore sworn and examined in this case, was here recalled for further

Direct examination.

By Mr. Fox:

Q. Mr. McCarthy, Mr. Nease in his report filed in this case has stated that coal should be considerably less for the year 1920 and the year 1921 than it was previously. I will ask you to state your coal cost per ton during 1920?

A. 1920 coal cost us in January $3.00 per ton; this is at the mines; in February $3.00 a ton; March $3.00 a ton; in April we got one car load at $5.00 a ton and various prices then from $4.25 to $5.00 a ton for the balance of the year.

Q. Making an average per ton of what at the mines?

1755 A. I don't know what that would average. We burn coke in here, burned coke, which we bought at $6.00 per ton. I don't know what it will average.

Q. Have you contracted for coal for this year?

A. We have.

Q. What has been your contract price?

A. $3.50 a ton at the present time.

Q. At the mines?

A. Yes sir.

Q. Is there any difference in the freight rate this year and last year?

A. The same, $1.54 a ton.

Q. Any difference last year and the year before that?

A. Yes, sir, I imagine there was a material difference; about, well, pretty near double.

Q. The freight rate at the present time is about double what it was in 1918?

A. Yes sir.

Q. How many tons of coal, approximately, will you use this year?

A. About 1,400 or 1,500 tons.

Q. Well, your cost for coal for this year, will it be more or less than $5,000?

A. It will be more than $5,000.

Q. You stated that your coal was $3.50 at the mines, freight rate $1.54 plus war tax?

1756 A. Yes sir.

Q. Then, what will 1,500 tons of coal cost you?

A. It will cost us,—of course I can't tell,—I don't know just what the market price will be for coal; at the present rates,—we are getting this rate for coal since about the first of March, when in February we paid $3.75 for coal, and in January paid $4.75, $4.50 and $4.25 for coal at the mines, and I can't tell whether the rate will be greater,—whether the charge for coal at the market price will increase or not or how much.

Q. At the price that you have contracted for, $3.50 per ton, plus

freight, what will that amount to for your coal during the coming year?

A. That would be $7,560.00 plus war tax.

Cross-examination.

By Mr. Dillard:

Q. Didn't you have any contract for coal in 1919, did you, Mr. McCarthy?

A. No, we couldn't find anybody to contract with.

Q. Did you ever have a contract before this year?

A. Yes sir.

1757 Q. What years did you have contracts for coal?

A. Prior to 1906 I believe; since 1906 we didn't have a contract until this year we have a contract for coal.

Q. When did you make this contract for the coal this year, Mr. McCarthy?

A. About the first of April, I think.

Q. Who with?

A. The Pocahontas Fuel Company.

Q. You say you agreed to pay $3.50 at the mines?

A. We agreed to pay the market price for it at the mines, to be determined on the 25th day of each month.

Q. And it may be considerably less than $3.50 a ton, may it not?

A. I can't say.

Q. You have as much right to assume it will be less as that it will be more?

A. I can't say.

Q. You stated to Mr. Fox you didn't know what it would be, because you didn't know what the market price would be; if it was $1.50 you pay $1.50, the same to be determined on the 25th day of each month, is that correct?

A. Yes sir.

Commissioner Wiles:

Q. How do you determine this market price, Mr. McCarthy?

A. By the price which Pocahontas coal is bringing on that

1758 particular date, not by virtue of spot coal or anything of that kind, but by the price that Pocahontas coal sells for on that particular date.

Mr. Dillard:

Q. And that is the 25th day of each month?

A. Yes sir.

Q. For instance, they furnish you coal this month and on the 25th of next month you and the coal company settle on the basis of the prices then prevailing?

A. Yes sir.

Q. How many fire taps have you on this line on the Bramwell road which has been testified about?

A. About seven, I guess, or eight.
Q. What revenue do you derive from them per month?
A. We don't get anything from them.
Q. How does it happen you have fire plugs and you don't get any revenue from them?
A. We don't get any revenue, any more, for additional fire plugs; the Public Service Commission settled that several years ago.
Q. How many fire plugs are you receiving revenue from now? Isn't it based on the number you have?
A. No sir.
Q. What is your rule about that?
1759 A. Well, the Public Service Commission decided the city should pay us a certain specific amount and have as much fire protection as they wished and put in as many as they wished to put in.
Q. Then, you are receiving some revenue from the city for your fire protection on that line, aren't you?
A. Well, we are receiving revenue of course, but we received that revenue before that extension was made.
Q. How much does the city pay you for fire plugs per month?
A. About $17,000 I believe or $15,000 a year.
Q. When did you install these fire plugs on this line?
A. Last spring early; the line was completed on the last day of May.
Q. Do you have any idea the amount of revenue you received from that line last month?
A. Mr. Rhods' statement is all.

The witness is excused.

1760 *Evidence for Protestants.*

Thereupon came C. O. STAHLMAN, a witness of lawful age, who, being first duly sworn, testified as follows:

Direct examination.

By Mr. Dillard:

Q. Mr. Stahlman, what official position do you hold in the city of Bluefield?
A. Mayor.
Q. How long have you been Mayor?
A. Practically four years.
Q. Since you have held the office of Mayor of the city of Bluefield I will ask you to state whether or not the water supply furnished by the applicant company has been adequate at all times for fire protection and domestic purposes to the city?
A. It has not.
Q. How frequently has it been inadequate, if you know?
A. On three or four occasions it was very low.
Q. Can you state, Mr. Stahlman, from your investigation and

from what you know as Mayor of the City the cause of the shortage of water?

1761 A. The dry weather on one occasion, followed by a break down of the pumping plant in South Bluefield,—I think called the Valley Improvement Company, and the other occasions severe cold weather caused the shortage of water supply.

Q. Last fall, in October or November, state whether or not there was a shortage in the supply of water and, if so, how [illegible]?

A. There was a shortage for practically a week [illegible] major portion of the town, especially affecting the high districts, and the company at that time I think only had one tank in reserve, which they had to maintain for possible fire danger.

Q. Was there any warning and notice given by the company of this approaching shortage on that occasion?

A. Not at that time.

Q. How many tanks has the Bluefield Water Works & Improvement Company within the city of Bluefield?

A. Three.

Q. You mentioned one tank reserved for fire service, is that one of the larger tanks?

A. Yes sir.

Q. And I believe you stated that on three or four occasions this shortage has occurred?

1762 A. Yes sir, Mr. McCarthy on one occasion warned me of the shortage and advised the putting on of additional men to avoid an outbreak of fire by guarding the property at night, so that if fire should occur we would catch it while it was small.

Q. Did he state on that occasion the cause of the approaching shortage?

A. He said the cold weather had reduced the supply until it was at a point where the daily consumption was using up all the pumps could supply.

Q. From your observation and investigation for the last four years since you have been Mayor of the City, state whether or not the water supply of the City of Bluefield is sufficient to furnish water to the inhabitants of the City of Bluefield at all times for all purposes?

A. It is not.

Q. From your investigation, what is necessary to put the company in position to furnish an adequate supply of water?

A. They would either have to store water during the rainy season to carry them over these dry periods or find another source of supply that is adequate to meet the growing demand and possibly to provide for contingencies like the one that arose in South Bluefield station by having an auxiliary pumping apparatus.

1763 Q. I believe you stated that the City on that occasion last fall was out of water at the high points and the shortage was all over the City for a period of about a week?

A. Yes sir.

Q. What was done by the applicant company to remedy that condition after the pump broke down, if you know?

A. After several days they secured another pump in this neighborhood and installed that, but I don't know wh-ther that has been removed since or not.

Q. Was it your understanding that was secured temporarily while they repaired the old one?

A. Yes sir.

Q. From your knowledge of the sentiment of the City of Bluefield and its inhabitants, state whether the patrons of the applicant company are willing to pay a reasonable rate for water, provided that the Commission requires the said company to put itself in position to furnish an adequate supply of water at all times?

A. The patrons of the company generally are willing and anxious to pay a right and proper rate for water, provided that supply is continuous and sufficient at all times for fire protection and domestic purposes.

1764 Q. Can you state to the Commission the feeling of the inhabitants of the City of Bluefield during the week we were short of water last fall?

(Objected to; overruled.)

A. The people throughout the districts particularly affected by this shortage were very indignant and called on me as Mayor to take the matter up with the Public Service Commission, to have the condition remedied at once, and I did call by wire over the telephone and by telegraphic communication with your Secretary, and several committees were appointed from various civic organizations to investigate the matter at this time, and the conclusion of their investigation was that something should be done to avoid any repetition of conditions as they existed last fall, and which have existed on several different occasions in the past three or four years.

Q. You mean the Secretary of the Public Service Commission?

A. Yes sir.

Q. Did the Public Service Commission in response to your wire send one of its engineers here to examine into the situation?

A. It did, sending Mr. Hall.

1765 Commissioner Wiles: Mr. Mayor, do you know of any new source of water supply available to the water company that could be procured at a reasonable expense?

A. No sir, I think the only supply would be on the other side of East River mountain.

(No cross examination.)

The witness is excused.

Thereupon came J. H. HOGE, a witness of lawful age, who, being first duly sworn, testified as follows:

Direct examination.

By Mr. Dillard:

Q. Where do you live?
A. I live in Bluefield.
Q. How long have you lived here?
A. 19½ years.
Q. What business are you engaged in, Mr. Hoge?
A. Wholesale produce and provision business.
Q. Do you remember an occasion last fall when the water supply in Bluefield became very low?
A. Yes sir.
1766 Q. During that time were you appointed on a committee by the Mayor to investigate the water situation?
A. I think that committee on which I served was from the Chamber of Commerce. I think I acted as Chairman; also I worked before that time with the Mayor on a committee for the same purpose.
Q. About how long was the water low within the city?
A. I am not able to tell exactly, but at the time we were active, it was I believe in the month of October, and we were more interested at that time in getting immediate relief from the existing conditions and went into details with the Water Company and the City people.
Q. Which officer of the water company did you have this matter up with?
A. Mr. William McCarthy, superintendent of the company here.
Q. Did you discuss with him the cause of the shortage at that time, Mr. Hoge?
A. We did.
Q. What was his statement as to the cause of the shortage?
A. Well, the acute shortage at that time was due, he told us, to the fact of it being a dry season and that the water was not to be had; we had been having that same trouble from time to time but
1767 that was the worst trouble we had had for several years, caused at that time by a break down at the Beaver pond, and that the machinery east of Bluefield was inadequate, and they were unable to supply sufficient volume.
Q. What methods were discussed between your committee and Mr. McCarthy as to how this situation could be relieved?
A. We went into the matter in a practical way with Mr. McCarthy, in detail, as to what might be done in case of emergency. To the best of my recollection it was estimated, in a general sort of way, —this was a general discussion you understand,—we couldn't go into detail as to the exact cost, but in a general round about way, the estimated cost of about $30,000 was arrived at to supply a duplicate auxiliary equipment; and we went so far as to tell Mr. McCarthy we would guarantee the terms, if that amount of money was spent by the company, in order to get immediate relief as at that time. We were practically without water.

Q. From your investigation and knowledge of the feeling of the patrons of the water company in Bluefield, state whether or not they are willing to pay a reasonable rate or return on any invest-
1768 ment that might be made by the water company or the applicant company which would guarantee an adequate supply at all times for fire and domestic purposes?

A. That is rather a hard question to answer, sir. There would be a great deal of opposition from a certain class of people. From the business people there would be no objections; to the people who carry heavy fire risks here I am satisfied it would be a very interesting subject, and I am confident there would be no trouble with a little educational work to get an increase. I have talked to practically all classes of people about it.

Q. On this occasion, state whether or not your committee and Mr. McCarthy discussed the method of storing water at or near Ada spring for the purpose of guaranteeing an adequate supply at all times?

A. Mr. McCarthy told my committee that there were months in the year when they had abundance of water, during which time it could be stored or an adequate amount stored to take care of the low water period, and he mentioned a location on the property above the pumping station, between the pumping station and one of the springs, in a basin, and he referred to a dam. Mr. McCarthy and one or two of my committee were more or less familiar with, and Mr. McCarthy stated it could be done at considerable expense.
1769 Q. Do you remember that he estimated what it would cost at that time?

A. I do not. He said it could be built up in sections, and I do not recall the amount of money mentioned.

(No cross examination.)

The witness is excused.

Thereupon came E. H. EASLEY, a witness of lawful age, who, being first duly sworn, testified as follows:

Direct examination.

By Mr. Dillard:

Q. Where do you live?
A. In Bluefield.
Q. How long have you lived in Bluefield?
A. Between eighteen and nineteen years.
Q. What business are you engaged in?
A. Fire insurance.
Q. Are you a member of the Underwriters Insurance Association?
A. Yes sir.
Q. Are you familiar with the insurance rates in the city of Bluefield, Mr. Easley?
1770 A. Yes sir.
Q. State whether those rates are high or low and, if so, for what reason?

A. Well, they are the rates given for a city of this classification.
Q. What classification is this city in?
A. Four and one-half.
Q. Does the water supply in the city affect in any way the rate on fire insurance?
A. Well, the water supply and fire fighting equipment.
Q. To what extent does the water affect it?
A. You have to have the water supply first.
Q. You have to have a proper water supply in order to secure a lower rate of insurance?
A. Yes sir.
Q. What would be necessary to be done to improve the water supply in order to secure a lower rate of premium?
A. To have an adequate supply at all times.
Q. To what extent would that affect the insurance premium rate?
A. I can't tell you now. I gave that information to somebody when we went to Charleston.
Q. Can you approximate it?
A. I think it was about 20 per cent reduction.
Q. Then, your opinion is if we had an adequate supply of water at all times we would get a 20 per cent reduction in insurance premiums?

1771 A. Yes sir, I had the report made of Bluefield several years ago, and by the National Association of fire insurance companies and gave a copy of that to Mr. McCarthy and to the Mayor, and that report gave the recommendations of this engineer who surveyed the city. However, it wouldn't be necessary to do all that was recommended in that in order to get a better classification, until we had a better water supply and a sufficient amount at all times to fight fire.

Cross-examination.

By Mr. Fox:

Q. Mr. Easley, if this company could find funds or would invest sufficient funds in its plant to secure an adequate water supply at all times, doesn't and wouldn't it result in a considerable saving to the inhabitants of the city of Bluefield in fire insurance, if the city then fulfilled its requirements in regard to fire fighting apparatus?
A. Yes sir.
Q. Then, if, as a result of the increased facilities for furnishing water and for the adequate supply the rates were increased, a part of those rates would be repaid out of the amount from or paid for fire insurance?

1772 A. Part of it would be saved in the insurance premiums paid by the property holders.

Q. It would, however, be necessary for the city also to comply with the recommendations of the Board of Fire Underwriters?
A. Yes sir, and they have done a great deal along this line already, the city has.

Commissioner Wiles:

Q. Mr. Easley, approximately what sum is paid out annually in Bluefield for fire insurance?

A. I would have to guess at that now. I took a good deal of trouble sometime ago to visit all the insurance agencies and to get the approximate amount of premiums they collected in Bluefield and my recollection is I gave the information to Mr. Fox.

Mr. Fox: If we can get that we will furnish it to the Commission. I don't seem to find it now.

The witness is excused.

Thereupon came EDWIN MANN, a witness of lawful age, who, being first duly sworn, testified as follows:

Direct examination.

By Mr. Dillard:

Q. How long have you lived here?

1773 A. Twenty-five years.

Q. What business are you in?

A. Banking.

Q. You are President of the First National Bank of Bluefield?

A. Yes sir.

Q. Also President of the Chamber of Commerce?

A. Yes sir.

Q. What is the membership of your Chamber of Commerce?

A. About 400.

Q. Do you remember an occasion last fall when there was a shortage of water in this city for several days?

A. I do.

Q. Where do you live, Mr. Mann?

A. I live at the corner of Russell and Juehling Streets.

Q. One of the high points in the city?

A. Yes sir.

Q. Were you out of water on that occasion?

A. Yes sir.

Q. Do you remember how long?

A. It occurred twice at my house, on two occasions, several days one time.

Q. During that time as President of the Chamber of Commerce did you appoint a committee from your chamber to investigate the water supply?

A. I did.

Q. From your investigation do you know whether the

1774 water was found adequate or not?

A. The report shows it was not.

Q. Did your Chamber of Commerce on that occasion after the report of the committee and discussion of the matter come to any conclusion with reference to water supply in the city of Bluefield? If so, state briefly what that body concluded in regard to the matter?

A. The only discussion of the matter was at a meeting of the Board of Directors, and the opinion of everyone seemed to be that they would be perfectly willing to pay a better rate if they could get an adequate supply.

Q. That seemed to be the sense of that body?

A. Yes, sir, of the Board of Directors.

Q. Of the Chamber of Commerce?

A. Yes, sir.

(No cross-examination.)

The witness is excused.

Mr. Fox: Mr. Easley stated to me and to Mr. McCarthy that, after having interviewed the agencies here, he estimated the annual insurance premiums paid to be between $130,000 and $150,000.

1775 Thereupon came E. C. WADE, a witness of lawful age, who, being first duly sworn, testified as follows:

Direct examination.

By Mr. Dillard:

Q. Mr. Wade, how long have you lived here?

A. Four years.

Q. What position do you hold here?

A. I am Superintendent of schools.

Q. As Superintendent of schools are you familiar with the location of the respective schools in your district?

A. Yes, sir.

Q. Have your schools been supplied with an adequate supply of water within the last four years at all times?

A. No, sir.

Q. On what occasions has the supply been inadequate and how frequent?

A. On one or two occasions we have not had water, but the most serious time was last fall, either in October or November. At that time for from four, five or six days we had no water in three of the buildings. In one of our buildings we have no water at all; at one of them we have no water and at the other one we have water on the lower end of the lot.

1776 Q. How many pupils have you, Mr. Wade?

A. We have about 3,000.

Q. Within the schools you have mentioned?

A. Well, not in those schools; in the schools affected by the shortage of water supply we would have about 1,800.

Q. How many pupils have you in the school houses in which you have no water supply at all?

A. In the one building in which we have no water about 75 to 90; the other building where we have water only in the end of the lot we have about 50.

Q. Where are those buildings located?

A. On the North Side.

Q. How close is the nearest water to the buildings?

A. Well, the Stinson school, the water is in the lower end of the lot, about 50 or 60 ft. The other building, it's quite a distance, I can't say how close.

Q. About how far is the distance to the other school?

A. I should think some 200 or 300 ft.

Q. Then, it is only necessary to convey the water about 60 ft. to one of the schools and 200 to 300 ft. to the other in order to furnish water to the buildings?

A. Yes, sir.

Q. Now, what was the sanitary conditions in all the schools while the water supply was low, in the schools in which you have
1777 water, and the sanitary conditions in those schools in which you have no water?

A. The sanitary conditions at those times or at that time was bad. We couldn't flush a toilet for several days; we only had school for an hour or two during the morning and in the afternoon and the pupils were dismissed to go home for toilet purposes.

Cross-examination.

By Mr. Fox:

Q. Mr. Wade, how many schools did you say have no water at all?

A. We have one has no water; the north side Stinson school have no water in the lower end of the lot. There is a spigot, however, in the basement of that building, but it is very seldom we have water except early in the morning when the pressure is pretty high.

Q. Those two schools are built up above the water supply level here, are they not?

A. Yes, sir.

The witness is excused.

1778 The witness Mr. RHODES recalled.

By Mr. Fox:

Q. Mr. Rhodes, you prepared the statement requested by Mr. Dillard, did you?

A. Yes, sir, I have.

Q. Please state what is shown on that statement?

A. It shows the number of taps made on the Bramwell extension since the first of the year.

Q. How many is shown on that statement?

A. Nineteen.

Q. What was the accrued revenue from those 19 taps?

A. $31.16 so far this year.

Q. Mr. Rhodes, have you figured out what the yearly income from these taps on the $40,000 extension will amount to?

A. I figure there is 50 taps at the minimum of $12.00 per year would amount to $600.00.

Q. Gross revenue from these taps, minimum?

A. Yes, sir.

Q. What per cent is that of $40,000?
A. About 1½ per cent, I think.
Q. That doesn't take into consideration the cost of pumping water to those taps,—that is gross, not net revenue?
A. Yes, sir.

1779 (The last statement referred to was here tendered and filed by the witness as "Rhodes Exhibit No. 2.")

Cross-examination.

By Mr. Dillard:

Q. This statement you have just filed is in addition to the statement you filed when on the stand before, is it, Mr. Rhodes?
A. Yes, sir.

The witness is excused.

Mr. Fox: The record in this case, the first application filed some five or six years ago, will show that the Water Company at that time stated that the water supply was inadequate, and that additional facilities were necessary, and that as the city grew this demand and need would become greater. The company at all times has admitted this shortage and admits it now. The position of the company in the matter is that this additional supply will require a large outlay of capital and that this capital can not be secured unless an
1780 adequate rate is granted the company on its present investment, and the company so soon as the surplus secured from its present plant will justify the additions or the expenditure of additional sums, stands ready to make those improvements.

Mr. Dillard: Counsel for the City of Bluefield desires to state in reply that the patrons of the Water Company are willing to pay an adequate rate on the amount invested, provided the Commission will enter such order as will secure to the patrons an adequate supply of water at all times, but feels that unless the Commission does enter an order requiring this company to furnish the adequate supply of water that the applicant will proceed in the future as in the past to, at regular and frequent intervals renew its application for an increase in rates, while at the same time failing in its duty to the public to furnish it an adequate supply of water.

Briefs to be filed.

1781 STATE OF WEST VIRGINIA,
Public Service Commission, To wit:

I, L. W. Stanard, Official Reporter for the Public Service Commission of West Virginia, hereby certify that the foregoing is, to the best of my skill and ability, a true and accurate transcript of all the testimony adduced before the Public Service Commission of West Virginia in the matter of application of Bluefield Water Works & Improvement Company for authority to change rates, now pending before said Commission.

Given under my hand this the 25th day of May, A. D. 1921.

L. W. STANARD, *Official Reporter.*

	Name.	Location.	Date.	Amount.
2916	R. L. Osborne	Bramwell Road	6-14-20	5.76
2917	J. R. Maxwell	" "	8-20-20	3.86
2918	J. H. Davidson	" "	6-16-20	6.00
2919	W. T. & Kate L. Brown	" "	6-16-20	6.00
2922	W. H. Kitts	" "	8-15-20	4.00
2923	John W. Ruble	" "	6-22-20	5.76
2924	J. S. Sutphin	" "	6-22-20	5.76
2926	B. & B. Lumber Co.	" "	7- 9-20	39.05
2933	Annie O. & L. F. Yost	" "	7-22-20	4.76
2934	H. L. Goforth	" "	7-22-20	4.76
2935	G. L. Booth	" "	7-22-20	4.76
2936	W. C. Gibberson	" "	7-22-20	4.76
2947	Karl Peterson	" "	8-10-20	4.20
2970	W. H. Crawford	" "	10-25-20	1.70
2971	C. C. Bevins	" "	10-25-20	1.70
2972	T. H. Simmons	" "	10-25-20	1.70
2973	T. E. Lawrence	" "	10-25-20	1.70
2974	Dr. E. W. Horton	" "	10-25-20	1.70
2975	" " " "	" "	10-26-20	1.70
2076	R. L. Godbey	" "	10-26-20	1.70
2977	C. R. Harry	" "	10-25-20	1.70
2978	H. C. Hambrick	" "	10-26-20	1.67
2979	A. B. Lilly	" "	10-25-20	1.70
2980	E. W. Ford	" "	10-25-20	1.70
2981	H. W. Davidson	" "	10-25-20	1.70

2982	C. S. Brooks	"	"	10-25-20	1.70
2990	Alta Bevins	"	"	12- 3-20	.40
2991	C. S. Duncan	"	"	12- 3-20	.40
					$122.30

1783 Outside Corporation Line.

Bramwell Road.

2937	Lola Whitt	7-23-20	$4.76
2969	Mary C. Ruble	10-25-20	1.70
			$6.46

Inside Corporation.

Old Graham Road.

2921	Wm. & Hazel Looney	6-15-20	$9.00
2925	G. O. Looney	11-15-20	3.00
			$12.00
			$6.46

1784 BULLETIN No. 64.

The Public Service Commission of West Virginia.

Case No. 1138.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY.

Application to Change Water Rates.

Submitted July 11, 1921. Decided September 7, 1921.

The Application of Bluefield Water Works & Improvement Company for a Revaluation of its Property and for Authority to Change Water Rates Granted in Part and the Answer and Cross-Petition of the City of Bluefield for an Order Requiring Applicant to Enlarge its Plants and Improve its Service Granted.

Appearances:

For applicant, A. J. Fox, and Sanders and Crockett.
For the respondent, John R. Dillard, and Russell S. Ritz.

WILES, *Commissioner:*

In this case the applicant, Bluefield Water Works & Improvement Company, asks the Commission to review and set aside its findings in Case No. 368, decided April 24, 1917, fixing the fair value of its property used in the public service, at $360,000.00, and to authorize such increases in water rates as will produce sufficient revenue to pay operating expenses and taxes, provide for depreciation and afford it a fair return not only upon the present fair value of its property now used and useful in its public service business, but as well, upon the estimated cost of certain proposed improvements and ex-
1785 tensions to its plant and property. On the other hand, the respondent, City of Bluefield, asks that the relief sought by the applicant be denied and by way of affirmative relief that the applicant be required to enlarge and improve its plant and equipment, so as to afford its consumers at all times a reasonably adequate supply of pure and wholesome water.

The applicant alleges that its rates for supplying water to its consumers in the City of Bluefield, as fixed by former orders of the Commission, are inadequate and insufficient to pay operating expenses and taxes and the sum necessary to be set aside for depreciation and for return upon the fair value of its property used in the public service; that the sum of $360,000, fixed as the fair value of applicant's property by orders made in Case No. 368 on April 24, 1917, and July 17, 1918, was arbitrary and without evidence to support such findings, and that said sum is grossly less than the present fair value of its property and constitutes in effect the taking of its property without due process of law, in violation of the Fourteenth Amend-

ment to the Federal Constitution; and that said finding does not take into consideration additions, betterments and improvements made since the orders aforesaid were made.

The applicant further avers that its present water supply is inadequate and insufficient; that due to the rapid growth and development of the City of Bluefield in area and population, the expenditure of a large sum of money will be required in the immediate future in the way of extensions, betterments and improvements in its plant and equipment in order to secure the water necessary to afford its customers an adequate supply, and that it will be unable to obtain the funds to finance such improvements unless such rates shall be fixed as will afford it such earnings as shall be necessary to pay all operating expenses and taxes, provide for a depreciation reserve and return upon the fair value of its property, but as well a return upon the estimated cost of such improvements.

Applicant prays that its present rate of 40¢ per thousand
1786 gallons for the first 2,500 gallons, and 30¢ per thousand gallons for all in excess of 2,500 gallons furnished its consumers during any one month, be increased to 50¢ per thousand gallons, and that certain further increases be allowed in its special contract rates based upon a guaranteed monthly minimum rate; and that the Commission review its former findings as to the present fair value of applicant's property and fix the present fair value thereof.

The answer and cross petition of the City of Bluefield avers that the sum of $360,000, fixed as the value of applicant's property by the orders above mentioned, is far in excess of the present fair value of said property, and that since said valuation, property removed and discontinued has been at least the equivalent in value of any additions made by the applicant since said valuation. And by way of cross petition, praying for affirmative relief, avers that the applicant has been negligent in many respects in the performance of its duty as a public service corporation, and that it has failed and refused to provide itself with the equipment and the water supply needed to afford the citizens and inhabitants of the City of Bluefield with adequate fire protection, as well as a sufficient quantity of water for domestic and other purposes; that the applicant's water supply is not only insufficient in quantity but the same has been permitted to become impure and polluted, and as such constitutes a menace to the health and life of the inhabitants of said city. The answer prays that the application be dismissed; that the applicant company be required to provide itself with a water supply at all times sufficient for adequate for fire protection and all other purposes, free of pollution, and pure and wholesome, and that the Commission direct an appraisal and revaluation of the property of applicant, and an audit of its books of account. To this answer and cross petition the applicant replied, admitting a shortage of water during unusually dry weather, but denying all other material averments.

Evidence was taken upon said application, answer and cross petition at the offices of the Commission in Charleston on January 18,

1921, and at Bluefield on May 20, 1921. At the direction of
1787 the Commission, an inventory and appraisal of applicant's property was made and a report thereof filed in evidence by W. Q. Gallaher, chief engineer, and an audit of applicant's books of account made and filed in evidence by H. E. Nease, chief statistician. At the instance of applicant, an inventory and appraisal was made by L. R. Howson, of the engineering firm of Alvord & Burdick, supplementing the inventory and appraisal made by John W. Alvord and heretofore filed in Case No. 368. At the conclusion of the testimony the case was argued by counsel and submitted.

After the case was submitted, an investigation was made by engineers representing the water company, the city and the Commission, respectively, for the purpose of ascertaining applicant's water supply available with its present plant and equipment, and of suggesting to the Commission methods of increasing this supply by storage reservoirs or from other sources. Reports showing the result of this investigation have been filed by the Commission's engineers and by W. E. Miller, representing the City of Bluefield, recommending the erection of a storage reservoir at Ada Springs, but no report has been received from applicant's engineers.

Valuation.

In Case No. 368, decided on the 24th day of April, 1917, an inventory and appraisal of applicant's property was made by John W. Alvord, of the firm of Alvord & Burdick, representing the applicant, and by W. E. Miller, an engineer representing the City of Bluefield, as a result of which Mr. Alvord found the then fair value of applicant's property to be $540,000, and Mr. Miller found the fair value to be $392,000, the method of valuation in each case being reproduction new, less depreciation, at five year average unit prices. At that time, as shown by the report of the Commission's statistician, the books of the company showed applicant's gross investment since its organization to be $407,882, and accrued depreciation charged off $83,445, leaving net investment $324,427. The Commission, after considering each of these engineer's reports, as well as the report of its statistician, as to investment cost, found the then present fair value of applicant's property to be $360,000. These re-
1788 ports were filed in evidence in this case.

Since that time, as shown by the reports of the Commission's engineer and statistician, the applicant has made additions and betterments to its plant and property, as follows:

In the plant of the Bluefield Valley Water Works Company, a subsidiary corporation, located in the State of Virginia, and constructed for the purpose of supplying water to the Bluefield plant from Bailey Springs, approximately $25,000.

In additions and improvements to its Bluefield plant from December 31, 1915, to December 31, 1920, $67,520.53.

The report filed by Mr. Howson, representing the firm of Alvord & Burdick, based upon unit prices averaged over the period 1910-1915, on the basis of reproduction new less depreciation and includ-

ing the property of the Bluefield Valley Water Works Company, shows the present fair value of applicant's property to be $624,548, and its reproduction value less depreciation based on 1920 prices, $1,194,663. From these figures this engineer estimates the present fair value of applicant's property to be $900,000.

The Commission directed its engineer to make an inventory and appraisal of applicant's property upon the following basis:

For all plant constructed prior to December 31, 1915, on the basis of reproduction new less depreciation, at prices prevailing during the year 1915, to which should be added for all plant constructed since December 31, 1915, gross investment cost less estimated accrued depreciation. This report shows the depreciated value of applicant's property, as of December 31, 1920, exclusive of Bluefield Valley Works and without including any allowance for going value or for water rights set up in the appraisal of Mr. Howson, to be $397,964.38.

The report of H. E. Nease, the Commission's statistician, filed on March 1, 1921, shows the gross investment in applicant's properties as of December 31, 1920, as carried on its books, less depreciation charged off, to be $365,445.13; that as of December 31, 1915,
1789 applicant's investment after deducting depreciation was $324,-427.38; and that since that time approximately $69,000 has been expended for additions to applicant's properties and approximately $28,000 charged off as accrued depreciation.

To summarize the various valuations given, we have the following:

Howson's valuation upon the basis of reproduction new, less depreciation, at prewar prices	$624,548.00
Howson's valuation on the basis of reproduction new, less depreciation, at 1920 prices	1,194,663.00
Howson's estimated present fair value for rate making purposes	900,000.00
Gallaher's valuation, on the basis of reproduction new, less depreciation, on the basis of 1915 prices, plus additions to capital made since December 31, 1915, at actual cost, excluding plant of Bluefield Valley Water Works, water rights and going value.	397,964.38
Nease's report of investment cost less depreciation	365,445.13
Commission's value as fixed in Case No. 368 ($360,-000) plus gross additions to capital since made ($92,520.53)*	452,520.53

The statistician's report filed in this case shows that the applicant's total gross investment since its organization, including its Bluefield Valley Water Works Plant, amounts to about $498,000, and that against this investment the applicant has set up and charged off as accrued depreciation approximately $110,000, leaving a net investment in all of its properties of approximately $388,000.

The applicant claims the present fair value of its property is not the sum of reproduction new less depreciation based either on prewar

*This sum includes value of plant of Bluefield Valley Works at $25,000.

prices or upon prices prevailing in 1920, but an intermediate sum which its witness fixes at $900,000.

Applicant's plant was originally constructed more than twenty years ago, and has been added to from time to time as the progress and development of the community required. For this rea-
1790 son it would be unfair to its consumers to use as a basis for present fair value the abnormal prices prevailing during the recent war period, but when, as in this case, a part of the plant has been constructed or added to during that period, in fairness to the applicant, consideration must be given to the cost of such expenditures made to meet the demands of the public.

Reproduction new less depreciation based upon average prices for the period of 1910-1915 as adopted by Mr. Howson, should show a lower valuation than reproduction new less depreciation based upon average prices prevailing in the year 1915, yet, in this case, we observe that Mr. Howson's reproduction value is in round figures $625,000, and Mr. Gallaher's value is in round figures $400,000, a difference of $225,00-. The different result obtained by these engineers can be to some extent reconciled by the different methods used in applying accrued depreciation and by adding to Gallaher's valuation the sums included in Howson's valuations for water rights, paving over and cutting through mains, difference in allowance for overheads, including preliminary organization and development cost, going value and the investment in Bluefield Valley Water Works plant.

The sum of approximately $625,000 found as the reproduction value of applicant's property by Mr. Howson, includes the following items, all, or a part of which are not included in the report of the Commission's engineer (the figures given below are approximate):

Difference in depreciation allowed	$49,000.00
Preliminary organization and development cost	14,500.00
Bluefield Valley Water Works Plant	25,000.00
Water rights	50,000.00
Excess overhead costs	39,000.00
Paving over mains	28,500.00
Total	$204,000.00

If these items are deducted from Howson's total valuation of $625,000, it would be reduced to $421,000, or a difference of approximately $25,000 over the value found by Gallaher, which difference is made up of various small items.

In the Gallaher valuation, 13% is allowed for overhead cost, which, taking into consideration the piecemeal construction of this
1791 plant, seems liberal, as many of such overhead costs, such as engineering and superintendence, administration and legal and general contingent costs and interest during construction, were in all likelihood included in operating costs and paid as such. Applicant's claim for cost for cutting and replacing pavement in laying mains, should not be allowed, unless the evidence discloses that such expense was actually incurred. In this case the plant was built with

the growth of the town, and in practically every case the mains were laid before paving was done.

Going Value.

That going value, that is, the difference in value between a going concern with an established business, and a plant completely assembled but without customers, is an element of value which must be taken into consideration in arriving at the fair value of the property of a utility for rate making purposes, is no longer open to question. Such value must be fixed in a more or less arbitrary way, yet, based upon all pertinent facts and circumstances in each particular case. In this case we are of opinion that an allowance of 10% for this element of value is not excessive.

Working Capital.

Working capital consists of the cash required to be kept in bank to meet the current demands of the utility and the stores and supplies kept on hand for current use in the operation of its plant. In this case we have accepted as a basis for working capital the value of material and supplies as shown by applicant's balance sheets, plus one-eighth of its annual operating expenses. Applicant's bills are not collected in advance and appear to be rendered on the first of the month following that in which the service is rendered. From which we assume that the average delay in payment from the beginning of the service is approximately six weeks. During this time current bills must be paid and sufficient cash must be kept on hand to meet current demands while customers' bills remain unpaid. The facts in this case indicate that an allowance of $10,000 should be made for working capital.

1792 Bluefield Valley Water Works.

The value of Bluefield Valley Water Works was excluded from the value of the applicant's property on a former rate hearing upon applicant's representation that this plant was located in the State of Virginia, a public utility under the laws of that state, and bound to render service to the public of that state when required. Our experience has shown that no service is rendered by this company except to the applicant, and that there is no likelihood of service being rendered by this company other than to the applicant, and inasmuch as this property is wholly owned by applicant its value should be included in the applicant's rate base.

Water Rights.

The applicant's water supply is obtained from a number of springs in the vicinity of Bluefield. Messrs. Alvord & Howson place a value upon these springs, in addition to the value of the land and cost of development, of approximately $50,000 as representing the value

of the water rights appurtenant to the ownership of the springs. The basis of this value is the difference between the cost of obtaining applicant's water supply from these springs and the next most available source. Mr. Miller, engineer for the City of Bluefield, places no value upon these springs for "water rights" and the Commission's engineer leaves the question open as one proper for determination by the Commission. Applicant's next most available source of water supply is shown to be Bluestone river, and the value of water rights in these springs was obtained by comparing costs of securing water from this river with the cost of operating the springs. The evidence in this case shows that the natural flow of the springs is insufficient to meet the applicant's year round requirements without the construction of tanks or storage reservoirs to impound and store the surplus water produced in the rainy season. This construction, it is shown, will entail large additional investment and a substantial increase in operating expenses. So, from the development of this situation it may now appear upon fur-
1793 ther investigation that a plant constructed to obtain water for the City of Bluefield from Bluestone river could be built and operated more advantageously from the standpoint of water supply and investment and operating costs than applicant's present plant.

Aside from this phase of the subject, it is very hard to disassociate the value of water from the value of the land in which it is contained. The value of the land in which these springs are found has been included in Gallaher's report, based upon the opinion of the persons familiar with the value of real estate in Bluefield and vicinity; this value is largely in excess of the original investment cost of the land. Furthermore, without a population to use it, this water supply would be valueless. Water is a necessity. Its existence or non-existence influences the location of centers of population. The public the applicant serves is entitled to some benefit from its proximity to this natural resource. From the evidence before us, we are unable to say that these springs have any value apart from the value of the land in which the same are contained, without invading the realm of speculation and conjecture. As that value has been allowed, no additional value will be given water rights as such in this case.

We turn now to the application of our conclusions to the question of the present fair value of applicant's property used and useful in its public service.

Gallaher's reports that his physical examinations of applicant's property shows it to be in 81% condition—that the actual depreciation is but 19% of its value new. Applying this percentage to applicant's gross investment cost of bout $500,000 leaves a present sound value of $405,000. If to this sum is added an allowance for going value and working capital, we find the present fair value on the basis of investment cost less actual depreciation to be about $455,000.

Accepting Mr. Howson's report of reproduction value, adjusted as

above shown to $425,000 and adding allowance for going value and working capital, the result is $477,500.

To adopt the method shown by Gallaher's report and adding to the value so found the value of the plant of Bluefield Valley
1794 Water Works Company and for going value and working capital, the present fair value of applicant's property is approximately $460,000.

After maturely and carefully considering the various methods presented for the ascertainment of fair value and giving such weight as seems proper to every element involved and all the facts and circumstances disclosed by the record, we are of opinion to and do fix the present fair value of the property of the Bluefield Water Works and Development Company, used and useful in its public service business, as of December 31, 1920, at $460,000.00.

Income and Operating Expenses.

The applicant filed as exhibits, Howson 1 to 7, an analysis of its income and operating expenses for the years 1915 to 1920, inclusive, showing total net earnings for the period of $104,670, or an average of $17,445 per year and the equivalent of a return of 4.85% upon the valuation of $360,000, fixed by the Commission in Case No. 368. The applicant's operating statistics for the years 1915 to 1918, inclusive, having been examined and considered in former rate applications, we shall, therefore, confine ourselves in this case to an examination of applicant's operating experience as disclosed by these figures for the years 1919 and 1920 as furnishing the best evidence of its probable future experience. According to applicant's method of accounting, its total gross revenue for the year 1919 was $67,702, and total operating expenses $47,948, leaving net earnings for the year of $19,754, applicable for depreciation and return upon investment. For the year 1920 applicant's gross revenue was $79,813 and its operating expenses $61,068, leaving as net revenue $18,135 applicable for depreciation and return upon investment. We held in Case No. 895 (in Re: Application Bluefield Water Works & Improvement Company, decided December 31, 1919) that upon the basis of fair value fixed in Case No. 368 of $360,000 the applicant was entitled to earn for return and depreciation 8% upon said fair value, or the sum of $28,800 annually. It, therefore, appears that upon the showing as made by applicant, its earnings for the years 1919 and 1920 have been inadequate to afford the
1795 return contemplated by the decision of the Commission in Case No. 865.

In the report of H. E. Nease, Commission's statistician, filed in this case on March 1, 1921, certain adjustments and corrections are made in applicant's statement of income and operating expenses as shown by its books for the years 1919 and 1920, and as reported by said statistician, applicant's income and operating expenses for these years are as follows:

	1919.	1920.
Total income	$66,521.33	$78,004.83
" expenses	38,805.77	49,539.83
Net operating income	$27,715.56	$28,465.00

This result is obtained by deducting from applicant's statement of gross income, the items of interest and rent on Bailey Farm, and by deducting from applicant's statement of total expenses, the following: From the item "water purchased", the difference between the amount carried on the books of the applicant and the actual volume of water supplied by Bluefield Valley Water Works Company at the rate of 5¢ per thousand gallons. From the item "Philadelphia office expense", the difference between $5,200, the amount charged, and $1,500, the amount allowed by the Commission in Case No. 368; also deducting the whole amount included in expense for "U. S. income tax" and one half the amount included for "amortization of rate case", a total in the case of 1920 of $11,528.66, deducted from expense, and $1,218.97 deducted from income.

We agree with the statistician's conclusions, except as to the items of United States income tax and deductions for water purchased. The Commission has heretofore held that normal income tax, whether state or federal, is properly included as an operating expense; and while in a former case the Commission held that 5¢ per thousand gallons afforded sufficient return for the service rendered the applicant by the Bluefield Valley Water Works Company, that conclusion was based upon conditions then prevailing. The Commission now being of opinion that for the water furnished by the Bluefield Valley Water Works Company the applicant should charge to cost of operating the necessary operating expenses and taxes incurred in furnishing such water plus interest on the investment in that plant at the rate of 6% per annum. These changes would reduce the net operating income as found by the statis-
1796 tician for the year 1920 to the extent of approximately $3,000.

In this case, however, we are not so much concerned with the method of bookkeeping employed by the applicant in keeping its accounts as in determining what rates will be required to afford it sufficient revenues to pay all necessary and proper operating expenses and taxes and to provide for depreciation and a fair return upon the fair value of its property.

In our examination of applicant's operating expenses for the year 1920 we find that the applicant paid for labor, including the salaries of its engineers and firemen, $12,870. The salaries of engineers and firemen rose from $2,276 in 1918 to $4,076 in 1919, and to $5,634 in 1920, or more than 100% since 1918. There was also a large increase in other labor costs in 1920 over preceding years. Labor costs are now everywhere being reduced, and in forecasting applicant's labor costs for 1921 and 1922, we anticipate there will be a reduction in labor cost for the same service of at least from

fifteen to twenty per cent, resulting in a reduction of operating costs of from $1,800 to $2,400 on account of the item of labor.

During the year 1920 the applicant used in the operation of its plant 15,555 tons of coal, for which it paid $8,321, or an average of over five dollars per ton. It is in evidence that applicant is now buying its coal on the basis of market price ascertained on the 25th day of each month, and that such coal is costing about $3.50 per ton at the mine, and that the freight rate is $1.54 per ton. At present market prices the best grade of Pocahontas coal can be purchased at $2.50 per ton or less, and if to this is added the freight rate of $1.54 per ton, applicant's coal cost should not exceed $4 per ton at the plant. The difference in applicant's coal cost for 1921 over 1920 should be at least $1,500. We do not desire to invade the province of the management in suggesting methods of conducting its business, but it is apparent that a substantial saving could be effected if its coal supply were bought and stored at the low prices usually prevailing during the summer months, or purchased under contract upon the basis of cost of production plus a certain percentage for profit to the poducer.

1797 To the cost of water purchased as shown in applicant's statement for 1920 is added $1,440 as the equivalent of a return of 6% upon $24,000, the cost of the investment in said plant. Since, as we have before stated, we are including the value of this plant in applicant's rate base in arriving at the sum necessary for operating expenses, we shall take this into consideration in comparing operating expenses of the future with applicant's experience for 1920.

In applicant's statement of operating expenses for 1920 is included $4,800 for salaries of Philadelphia office, and $400 for rent of this office. In Case No. 368 the Commission held this charge to be excessive for the service rendered and allowed for this purpose, as an operating expense, and as reasonable compensation for said service, the sum of $1,500. On account of the increase in the cost of living since this item of expense was considered by the Commission, we are of opinion to increase the allowance for expenses of Philadelphia office, including rent and salary, to $2,400. In applicant's statement of operating expenses for 1920 is included an item of $2,910 for amortization of expense of rate case. This expense was incurred in Case No. 368, wherein a complete inventory and appraisal of applicant's property was made, and in considering this item in a former case we held that the expense of this case should be amortized over a period of ten years instead of five years as claimed by the applicant. The work done in that case was of permanent value to the applicant and will not be required to be duplicated in the future. For that reason we adhere to our former decision and reduce operating expenses for amortization of rate case one half of the amount included in applicant's statement. In 1920 applicant expended for materials and supplies used in the operation of its plant a sum in excess of $3,500, and as the price of the character of the materials and supplies used by the applicant in 1920 have sustained a very substantial decline, we shall anticipate a reduc-

tion of expense from this source of at least 20% or approximately $700.

To summarize our conclusion as to probable reduction in expenses of 1921 and 1922 over 1920, we obtain the following:

1798	Labor	$2,400 00
	Coal	1,500 00
	Interest on investment in Bluefield Valley Water Works Company	1,440 00
	Reduction in expenses of Philadelphia office	2,800 00
	Reduction in rate case expense	1,450 00
	Reduction in the cost of materials and supplies	700 00
	Total	$10,290 00

The only item of expense which we anticipate will increase for 1921 over 1920 is that of taxes. Applicant's taxes for 1920 amounted to $9,056. Due to the enactment of the Gross Sales Tax and the general increase in taxes, we anticipate that applicant's taxes for 1920 will be approximately $10,000, and an increase of approximately $950 will be allowed for this item.

From the foregoing figures it will be observed that applicant's operating expenses for the year 1921 and subsequent years should be approximately $10,000 less than its expenses as shown by its statement for the year 1920.

Applicant's gross income for the year 1920, excluding interest and rent on Bailey Farm, was in round figures $78,000. Due to the natural growth of the City and the consequent increase in the consumption of water, we anticipate that this gross income, at present rates, for 1921, will be approximately $80,000. Based upon the figures above given for applicant's operating expense for 1920, we are of opinion that applicant's necessary operating expenses and taxes for the year 1921 will not exceed $53,000, leaving a net operating income for the year, at present rates, of $27,000, the equivalent of a return of 5.87% upon the sum of $460,000, the fair value of applicant's property as herein fixed. In order to earn 8% upon the fair value of its property for return and depreciation, applicant's net operating income should be approximately $37,000, indicating that applicant's present rates are insufficient to afford it a return of 8% upon the fair value of its property to the extent of $10,000.

In concluding the subject of income and operating expenses, we feel constrained to point out that the time has now come,
1799 when in the normal case utilities in West Virginia must prepare for a reduction of rates corresponding to the decline in the cost of materials and labor entering into the cost of operation.

Water Rates.

The following table shows applicant's present rates, the rates proposed to be put into effect by this application and the percentage of increase proposed in each item of its schedule. (The figures given are in terms of thousand gallons.)

	Present.	Proposed.	Per cent of increase.
First 2,500	40¢	50¢	25%
All over 2,500	30¢	50¢	66 2/3%
Special Contract Monthly Minimum:			
$6.75	25¢	30¢	20%
20.00	20¢	25¢	25%
54.00	18¢	20¢	9 1/9%
128.00	16¢	16¢	.....

The application proposes no increase in rates for public and private fire protection, revenue from this source being $15,880 for the year 1920.

If we are correct in our assumption that the applicant's gross revenue for 1921 will amou-t to $80,000, then the additional revenue required by the applicant in order to enable it to earn a return of 8% upon the fair value of its property, would, under this application, be applied to consumers now paying gross revenue of approximately $64,000 per year, the equivalent of an increase to these consumers of approximately 16%.

The evidence does not disclose the number of applicant's consumers, how the same are classified or the revenue derived from each class, hence we are unable to determine the revenue that will be realized by the rates proposed to be put into effect by the applicant or whether such proposed increases are equitably adjusted as between its various classes of consumers. But in order to afford the applicant the additional revenue required to enable it to earn a reasonable return upon the value of its property, we are of opinion
to allow the applicant to surcharge its present rates, except
1800 for public and private fire protection, and its minimum rates, by adding to its monthly bills a sum equivalent to 16% of the amount thereof; but the applicant will be required to forthwith furnish us such additional information as we may deem necessary to enable us to fix such rates to the applicant's several classes of consumers as will equitably distribute between them the increased revenue required.

Water Supply Service.

As we have before stated, applicant's water supply is obtained from a number of springs located in the vicinity of Bluefield. Under normal conditions these springs afford a sufficient volume of water for the present needs of the City of Bluefield. During the wet season the supply is more than sufficient and a large volume of water produced by the springs is not used, but during the dry season and in very cold weather the springs do not produce sufficient water for adequate fire protection, or even ordinary domestice consumption. The protests and objections of the City of Bluefield to the rates proposed by the applicant has been more largely inspired by

insufficient quantity of water and the consequent poor service rendered by the applicant rather than any disposition to prevent the applicant from securing rates affording it a fair return upon the fair value of its property.

At the instance and suggestion of the Commission, a survey and investigation was made by engineers representing the Commission, the City of Bluefield and the Water Company, respectively, with the view of ascertaining what could or should be done in order to enable the company to increase its water supply so as to afford the City of Bluefield adequate fire protection and sufficient water at all times for domestic and other purposes. A report has been made by the Commission's engineer and the engineer for the City of Bluefield, showing the result of this investigation, from which it appears that the springs now used by the water company *is* the only practicable, available source of supply and that this supply can only be increased by building storage reservoirs or erecting tanks to impound the surplus water produced by these springs in wet weather for use during periods of scarcity. These engineers recommend the
1801 installation of an additional pumping unit at Ada Springs and Bailey Springs, and the erection of a storage reservoir at Ada Springs, of sufficient size and capacity to conserve water wasted from these springs during the wet season as a reserve for periods of shortage. The applicant's gravity tanks or reservoirs have a capacity of about 1,700,000 gallons, but little more than the average daily normal consumption of water in Bluefield. In addition to these tanks the applicant maintains a storage reservoir at Ada Springs of a capacity of about twenty millions gallons, sufficient for about fifteen days' normal consumption.

The report further shows that the water company's plans contemplate the erection of a storage reservoir or dam at Ada Springs, of a capacity of more than 600,000,000 gallons, provided it shall be developed that such plan is feasible. The present or prospective rate of water consumption for the City of Bluefield does not justify the expenditure required for a storage reservoir of this capacity, but it does appear that additional storage capacity is imperative. In our opinion additional storage capacity sufficient for thirty days' normal requirements will for the present and immediate future afford an adequate supply of water not only for all domestic and industrial purposes but for fire protection as well.

The water company will be required to install an additional pumping unit at Ada Station and Bailey Springs Station as recommended in said report; to move its Bland Street tank from its present location to a higher elevation, and to provide by additional tanks or storage reservoir for the storing of water in excess of its present capacity sufficient for at least thirty days' normal consumption for all purposes in the City of Bluefield. The water company shall submit, for the approval of the Commission on or before the 15th day of October, 1921, plans and specifications for the work herein required to be done, and when said plans shall have been approved the said work shall be commenced at once and pushed to completion as rapidly as practicable. The surcharge in rates herein allowed shall become

effective as of the first day of September, 1921, as to all flat rate consumers, and from and after meter readings in the month of August for all meter consumers, and shall continue and remain in
1802 effect until the first day of November, 1921, unless sooner suspended, changed, modified or extended by subsequent order herein; and the failure of the applicant to, in all respects, comply with the requirements of this order will be regarded by the Commission as sufficient reason for the suspension of the rate increase herein allowed.

It is urged by the applicant that such rates should be allowed as will not only provide sufficient revenue to pay operating expenses and taxes and provide for depreciation and return upon the present fair value of applicant's property, but as well, pay a fair return upon the investment necessary to construct and install the improvements herein required. This position is not tenable. The applicant is only entitled to earnings sufficient for return and depreciation upon the fair value of its property used and useful in the public service. Provision for return and depreciation upon future investments will be made by rate increases, if necessary, when such improvements have been made and put into the service of the public.

An order will be entered in accordance with our conclusions as herein announced.

1803 The Public Service Commission of West Virginia,

Capitol Building,

Charleston.

A meeting of the Public Service Commission of West Virginia held on the 7th day of September, A. D., 1921.

Case No. 1138.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY.

Application to Change Water Rates.

This day this case came on to be heard upon all of the pleadings, papers, exhibits and reports filed and orders made and entered herein, and upon argument of counsel;

Upon consideration of all whereof, for the reasons set forth in the written opinion of the Commission, which is hereby made a part hereof, the Commission doth find and order:

(1) That the present fair value of applicant's property used and useful in its public service business as of the 31st day of December, 1920, is $460,000.

(2) That the applicant be, and it is, hereby authorized to increase its monthly rates for water furnished all of its consumers, except for public and private fire protection, by adding to its monthly bills,

based upon its present rates per thousand gallons, a surcharge of 16% of the amount thereof; except said surcharge shall not apply to minimum rates.

(3) That the foregoing rates shall become effective from and after applicant's meter readings in the month of August, 1921, so as to be applicable to all water consumed as shown by September meter readings, and shall continue and remain in effect until the first day of November, 1921, unless before that time suspended, modified, changed or extended by subsequent order herein. But before said rates shall become effective the applicant shall file in the office of the Secretary of this Commission tariffs conforming to the provisions of this order.

1804 (4) The applicant shall, as soon as the information can be obtained and not later than the first day of October, 1921, compile and furnish to the Commission a statement, duly verified, showing (*a*) its income and operating expenses, in detail, for the six months' period ending June 30, 1921; (*b*) the volume of water pumped and the volume of water consumed as shown by customers' meter readings, and an estimate of the volume of unmetered water used for the calendar year 1920, and for the six months' period ending June 30, 1921; (*c*) the number of metered and unmetered *consumers* consumers classified as between domestic, commercial and industrial and the volume of water used by each class; (*d*) the number of consumers using upon an average less than 2,500 gallons of water per month; (*e*) the number of consumers taking water under the special contract rate, with guaranteed minimum, the character of the use of said water, the quantity of water used by such consumers and the number of consumers under each item of this schedule; (*f*) the number and character of private fire protection connection and the revenue derived therefrom.

(5) That applicant shall prepare and submit for the approval of the Commission, on or before the 15th day of October, 1921, plans and specifications for the construction and installation of the improvements and additions to its plant required as shown by the written opinion of the Commission herein.

(6) That this case be retained upon the docket for the purpose of receiving said reports and of taking such further evidence and of making such further orders herein as may to the Commission seem proper.

A Copy.

Teste:

R. B. RERNHEIM,
Secretary.

1804½ STATE OF WEST VIRGINIA,
The Public Service Commission, To wit:

I, R. B. Bernheim, Secretary of The Public Service Commission of West Virginia, do hereby certify that the papers herewith are all duplicate originals, certified copies, or copies of such part of the record which were lost and destroyed by fire, as have been supplied in accordance with Section 4870, Chapter 130, of the Code of West Virginia, as were before The Public Service Commission at the hearing or investigation resulting in the entry of the order from which the petitioners appeal in the matter of: Case No. 1138, Bluefield Water Works & Improvement Company, Application for uthority to change water rates, in which an appeal was taken from the order of The Public Service Commission to the Supreme Court of Appeals of West Virginia.

Given under my hand and the seal of the Commission, at the City of Charleston, this 7th day of January, A. D., 1922.

[Seal of the Public Service Commission of West Virginia.]

R. B. BERNHEIM,
Secretary.

1805 At another day, to-wit, on the 1st day of November, 1921, the following order was made and entered:

4447.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY, Petitioner,

vs.

PUBLIC SERVICE COMMISSION et al., Respondents.

Upon Petition for Suspension of an Order of the Public Service Commission Entered on the 7th Day of September, 1921.

This day came the petitioner, by Sanders, Crockett, Fox & Sanders, its attorneys, and respondent, City of Bluefield, by Russell S. Ritz, its attorney, and all questions arising upon the petition filed in this case were fully heard upon the papers, evidence, documents and records which were before the Public Service Commission at the time of the entry of the order complained of, together with a statement of the reasons of said Public Service Commission for the entry of said order and the arguments of counsel thereon, and are submitted for decision.

At another day, to wit, on the 14th day of December, 1921, the following order was made and entered:

4447.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY, Petitioner,

vs.

PUBLIC SERVICE COMMISSION et al., Respondents.

Upon Petition for Suspension of an Order of the Public Service Commission Entered on the 8th Day of September, 1921.

The Court, having maturely considered the petition filed in this case, the papers, documents, evidence and records which were before the Public Service Commission at the time of the entry of the order complained of, together with a statement of the reasons for the entry of said order, and the arguments of counsel thereon, is of opinion, for reasons stated in writing and filed, that the petitioner has not shown itself entitled to the relief prayed for. It is therefore considered by the Court that the order of suspension prayed for in this case be and the same hereby is refused and that the petition filed
1806 in this case be and the same hereby is dismissed, and that respondent, City of Bluefield, do recover from petitioner its costs about its defense in this Court in this behalf expended.

It is further ordered by the Court that leave be and the same hereby is granted to respondent, Public Service Commission, to withdraw from the office of the Clerk of this Court all the papers, documents, evidence and records which have been filed in said office in this case.

All of which is ordered to be certified to the Public Service Commission of the State of West Virginia.

The decision of points in the foregoing case, as the same appears from the syllabus and written opinion prepared by Judge Miller, was concurred in by Judges Ritz, Poffenbarger, Lynch and Lively.

The decision of points as shown by the syllabus and written opinion aforesaid are in the words and figures following:

1807 4447.

BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY

vs.

PUBLIC SERVICE COMMISSION.

Application to Suspend Rates.

Refused.

Miller, Judge.

1. The true basis for rate making purposes for a public utility is the actual fair value of its investment at the time used and useful in the business of furnishing service to the public.

2. In the case of a public utility the original cost considered in connection with the history and growth of the utility, and the value of the service rendered, constitute the principal elements to be considered in connection with rate making for the service rendered the public.

3. In estimating the value of the property and capital employed by a water company in the public service, the value of the springs on lands purchased as a source of water supply, in proximity to the municipality served, as a general rule, is properly limited to the actual amount invested by the utility therein, particularly so when there are other sources of supply that may be obtained, as a river or other natural water course, and the municipality must be deemed to have been located with reference to such natural sources of water supply employed by the company.

4. Fixing the rate of eight per cent on the fair value of the property employed by such utility, determined as aforesaid, and based on prior earnings and estimated savings of expense, etc., over previous years, after deducting therefrom all necessary and proper operating expenses and taxes, to continue for a certain
1808 period, was within the power of the public service commission, as a means of subsequently determining what such rates should afterwards be on the subsequent report of the utility to enable it to earn such reasonable rate of income.

5. In determining the value of the property of a public utility so employed in the public service and the rate it should be allowed to earn, however, each case must depend upon and be controlled by its own peculiar facts, and the court will not interfere with the order of the public service commission unless the rate allowed is unreasonably low or unreasonably high.

6. A public utility has no right to a rate sufficient to cover the cost of expenditures for additions to its plant in advance of the actual installation of such extensions or additions and their employment in the public service.

7. The public service commission may lawfully require a public utility to make extensions and additions to its plant when they are necessary to enable it to serve the public as required by law or the provisions of its contract or franchise.

1809 MILLER, *Judge:*

We are petitioned to review and suspend the judgment of the Public Service Commission in this case, pronounced on September 7, 1921, on several grounds.

First. That the commission erroneously fixed the sum of $460,000.00 as the value of petitioner's plant for rate making purposes, instead of the sum of $900,000.00 which it contends was justified by the facts and the law controlling the commission in

such cases. From the written opinion of the commission we find that it ascertained the value of the petitioner's property for rate making, "after maturely and carefully considering the various methods presented for the ascertainment of fair value and giving such weight as seems proper to every element involved and all the facts and circumstances disclosed by the record." The reports of Gallaher, engineer employed by the Public Service Commission, and Howson, engineer employed by the applicant, were given special consideration by the commission. Gallaher's report was that the physical condition of the property was 81%, showing a depreciation of 19%, and that by applying this percentage to applicant's gross investment, which, including the value of the plant of the Bluefield Valley Water Works Company owned by it and representing an investment of $25,000.00, amounted to about $500,000.00, left the present sound value of the property $405,000.00, and if to this sum should be added allowance of 10% for going value, and $10,000.00 for working capital, the fair value of applicant's property would be approximately $460,000.00. On the other hand the report of Howson, of the reproduction cost less depreciation, at pre-war prices, showed the value of the plant to be $624,548.00, approximately $625,000.00. And if properly adjusted by eliminating items in excess of those included in Gallaher's report, aggregating $204,000.00, and adding allowance for going value and working
1810 capital, the result would be $477,500.00.

The contention of applicant's counsel, however, is that the commission should have determined the value of the plant with reference to the sum of $1,193,663.00, the cost of reproduction new less depreciation, at 1920 prices, as reported by Howson, or the sum of $900,000.00, recommended by him for rate making purposes, arrived at by dividing by two the aggregate of $625,000.00, found by Gallaher, based on reproduction new less depreciation at pre-war prices, and Howson's estimate based on 1920 prices. This estimate of Gallaher, it seems, was based on the average prices prevailing for the period of five years between 1910 and 1915.

In our opinion the commission was justified by the law and by the facts in finding as a basis for rate making the sum of $460,000.00. No fixed standard or formula applicable to all cases has yet been established by statute, judicial decisions, or by the judgment of public service commissions. Courts and commissions have, as in the instant case, been mainly controlled by the facts developed in each individual case. In our case of City of Huntington v. Public Service Commission, decided at the present term, we considered the true basis for rate making "the actual fair value of the investment at the time used and useful in the business of furnishing service to the public." This was held to be the true basis in the leading case of Smyth v. Ames, 169 U. S. 466. In that case the court said: "We do not say that there may not be other matters to be regarded in estimating the value of the property. What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience." That the basis of production new less depreciation cannot be adopted with fairness to the utility or to the public is well

illustrated in the case of Steenerson v. Great Northern Railway
1811 Company, 69 Minn. 353, where it is supposed that at the time the railroad was built rails cost $85.00 per ton and the present price was only $16.00 per ton, so that when built the railroad cost $40,000.00 per mile, and if built at the time of the controversy, it could be built for $12,000.00 per mile. In such a case it would be unfair to the corporation to take as a basis for revaluation the reproduction cost new less depreciation. The Minnesota rule, so-called, has not received the approval of many of the state or federal courts. 2 Wyman on Public Service Corporations, sec. 1107 et seq. In our case of Coal & Coke Ry. Co. v. Conley, 67 W. Va. 129, it is said: "It seems to be generally held that, in the absence of peculiar and extraordinary conditions, such as a more costly plant than the public service of the community requires, or the erection of a plant at an actual, though extravagant, cost, or the purchase of one at an exorbitant or inflated price, the actual amount of money invested is to be taken as the basis, and upon this a return must be allowed equivalent to that which is ordinarily received in the locality in which the business is done, upon capital invested in similar enterprises. In addition to this, consideration must be given to the nature of the investment, a higher rate being regarded as justified by the risk incident to a hazardous investment."

That the original cost considered in connection with the history and growth of the utility and the value of the services rendered constitute the principal elements to be considered in connection with rate making, seems to be supported by nearly all the authorities. Whitten on Valuation of Public Service Corporations, Ch. V. page 82 et seq. All the leading cases on the subject are there discussed. See also, 2 Wyman on Pub. Serv. Corp., Ch. XXXII, covering the same subject. In the case at bar, the commission, agreeable to these authorities, properly took into considera-
1812 tion all the elements going to establish the fair value of the petitioner's property on which it is entitled to earn a fair return, and we perceive no error therein justifying us in suspending its order on that ground. It has included a fair sum for going value, working capital, and the value of the utilities employed in connection therewith.

One of the points urged by counsel for the applicant is that it was entitled to have included in the estimated value of its plant the supposed value of certain water rights purchased and owned by it, being the springs on land purchased, its present chief source of water supply. There was included in the commission's estimate the actual amount invested in the subsidiary company, the Bluefield Valley Water Works Company, but the commission denied the right of the applicant to value these water rights beyond the actual cost of the land on which the springs are located. The applicant, to fulfill the obligation of its franchise, was bound to obtain a supply of water from some source. The only source of its supply was these springs and the Bluestone River. The City of Bluefield, whose inhabitants it serves, was doubtless located with reference to those sources of water supply, and it, and not the utility company employing them,

was entitled to the benefits of their relative location. The commission was not able to say, without much speculation, that these springs had any value beyond the value of the land on which they were located, which was included in the commission's estimate. In the case of Sherman v. California-Michigan Land and Water Company, Pub. Utility Rep. 1918D, page 93, a water rate case, the California Railroad Commission refused to allow anything for percolating waters, aside from the value of the water-bearing lands, considered for all available uses they might be put to, including the pumping of water therefrom. In Re United Fuel Gas Company,
1813 Pub. Utility Rep. 1920 C, page 583, our Public Service Commission, in acordance with numerous decisions, held that the gas company, while entitled to charge a rate based on the value of the property it devoted to the public use, was not entitled to add to this a value brought about by appreciation of the land due to the discovery of large quantities of gas. The petitioner, in addition to the springs, had as a source of supply the Bluestone River, and it does not appear that the springs land had any advantages over the river, in point of economy, in supply or operation of its plant. It does appear that the springs owned, did not at all times furnish an adequate supply of water and would not do so without the erection of impounding tanks at great expense, whereas the river would furnish an ample supply of water, if the water therefrom was requisitioned in the proper way. In San Diego Land Company v. National City, 174 U. S. 739, the question of the right to include for rate making the supposed value of water rights was mooted, but not decided. And the same question was raised, but not decided, in Denver v. Denver Union Water Company, 246 U. S. 178, 193. The cases cited and specially relied on by petitioner, are Fairbanks v. United States, 181 U. S. 283, and United States vs. Gettyburg Electric Railway Co., 160 U. S. 668. These were condemnation cases, in which the question of the value of franchises was considered. For rate regulation the value of a franchise is not generally considered, such value being based on the capacity to earn profits; this for the reasons stated in 2 Wyman on Pub. Serv. Corp. Sec. 1104, and considered by Mr. Justice Peckham in Willcox v. Consolidated Gas Company, 212 U. S. 19.

The next point which need be considered is that the rate fixed by the Public Service Commission, determined by adding to
1814 petitioner's monthly bills, based upon its rates per thousand gallons, a surcharge of 16% of the amount thereof, but not to apply to minimum rates, effective from and after applicant's meter readings in the month of August 1921, is inadequate. The commission estimated that with this increase in rates, the applicant, out of the estimated gross income, based on prior earnings and estimated savings of expenses etc. over previous years, and after deducting therefrom all necessary and proper operating expenses and taxes, would be enabled to earn 8% on the fair value of its property fixed at $460,000.00, for a proper return and depreciation. This rate being based upon estimates of receipts, expenses and deductions, the commission did not undertake to make the rates permanent, but to

remain effective until November 1, 1921, unless before that time suspended, and required the applicant, as soon as the information could be obtained, but not later than October 1, 1921, to furnish it certain specified data covering its income and operating expenses for the period of six months prior to June 30, 1921, and other data, which would enable the commission to modify or correct its estimate and make any further order in the case called for by the facts, these to be disclosed in order to enable it to deal justly with the applicant and the public served by it.

It is contended, however, that the rate of 8% on the value of the property, even as fixed by the order of the commission, is not adequate, but grossly inadequate, based on the actual value of the property when arrived at upon the proper basis. It is probably unnecessary to consider this question. Assuming that the correct amount is the present actual value of the property devoted to the public use, the commission appears to have reached its conclusion by considering, not only the cost of reproduction new less depreciation, but all other proper elements throwing light upon the subject, and
1815 warranted by the facts and authorities, including the amount of the original *investment*, and the fact that the capital investment and the depreciation account carried on the books of the company was far less than that fixed by the commission as the value of the property for rate making purposes. The commission included in its estimate the actual cost, at prevailing prices, of improvements made since 1917, when the value of the property for rate making purposes was fixed at $360,000.00.

It is argued that the rate of net return ought to be sufficient to induce capital to engage in such public enterprises, and that the estimated net income to cover return and depreciation will not be sufficient for that purpose in view of present prevailing rates of interest and incomes from other classes of business. But why not? Is not 6% net, clear of taxes and all operating expenses, including a sum equal to 2% for depreciation, as good or better than returns from most enterprises of a similar character? Legislatures and public service commissions exercising legislative functions are not to be tied down to fix rates of income. Every case must be controlled by its own facts, and in no case will the courts interfere unless the rate allowed is unreasonably low or unreasonably high. Beyond this courts have no right to interfere with the rate making authorities. Lincoln Gas & Electric Light Co. vs. City of Lincoln, 250 U. S. 256; Knoxville v. Knoxville Water Co., 212 U. S. 1; Coal & Coke Railway Co. v. Conley, supra.

That a public utility has no right to a rate sufficient to cover extensions or additions to its plant, we decided in the Huntington case cited. And we held in the same case that such a utility could not properly be allowed a rate which would give an income on investments for extensions and improvements not already made.
1816 In this case there was much evidence going to show that the applicant had not been performing faithfully the obligations of its franchise; that it had been furnishing a very inadequate supply of water, of which much complaint had been made and lodged

against it, to the extent that the commission felt called upon to order the applicant to submit plans for extensions and improvements, to enable it to discharge its duty to the public under its franchise. These facts the commission had the right to take into consideration in prescribing rates.

The last point made by petitioner is that the commission ordered it to submit plans for the requisite improvements. That this action of the commission is fairly within the authority given it by the statute, there can be no doubt. Besides, the franchise, in evidence, requires it to do what the commission contemplates it shall do by the provisions of its order. So held in City of Columbus v. Mercantile Trust & Deposit Co., 218 U. S. 645, approved in the more recent case of New York Electric Lines Co. v. Subway Co., 235 U. S. 179.

For the foregoing reasons, we are of opinion to refuse to suspend the order of the Public Service Commission, but to affirm the same.

1817 The Supreme Court of Appeals of the State of West Virginia.

BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY, Petitioner,

vs.

PUBLIC SERVICE COMMISSION et al., Respondents.

Petition for Writ of Error.

The petition of the Bluefield Water Works and Improvement Company, a corporation, by Joseph M. Sanders, and Sanders, Crockett, Fox & Sanders, its attorneys, hereby sets forth:

That on the 14th day of December, A. D., 1921, the Supreme Court of Appeals of the State of West Virginia made and entered a final order, judgment, and decision herein, in favor of the Public Service Commission of West Virginia, in which said final order, judgment, and decision, and the proceedings had prior thereunto in this cause and matter, certain errors were committed, to the prejudice of the Bluefield Water Works and Improvement Company, petitioner, all of which will more fully, in detail, appear from the assignment of errors which is filed with this petition.

That the Supreme Court of Appeals of the State of West Virginia is the highest Court in the said State of West Virginia in which a decision in this suit and in this matter could be had.

Petitioner further shows that it is a corporation, created and existing under and by virtue of the laws of the State of West
1818 Virginia, and that it is engaged in furnishing water to the City of Bluefield, West Virginia, and to the inhabitants thereof.

That it is a public service corporation, and, as such, is subject to the control and regulation of the Public Service Commission of West Virginia under the terms and provisions of Chapter 15-0 of Barnes' Code of West Virginia, 1918, which said chapter of said code creates

the said Public Service Commission and invests therein control of all public service corporations in the State of West Virginia.

That section 16 of said chapter 15-0 of said code gives to any party aggrieved, by an order of the said commission, the right to appeal to the Supreme Court of Appeals of West Virginia, and prescribes the procedure to be followed on such appeal.

Petitioner further shows that, pursuant to the provisions of said laws of West Virginia, on the 14th day of April, 1914, petitioner filed its application before the said Public Service Commission, praying for an increase in rates, to which application the City of Bluefield appeared and resisted the granting of the increase in rates prayed for in said application, and demanded an inventory and valuation of the plant and properties of the petitioner.

That, in compliance with said demand and request of the City of Bluefield, petitioner employed the firm of Alvord and Burdick, hydraulic and sanitary engineers, of Chicago, Illinois, who made a complete inventory of the properties of petitioner as of January 1, 1915, which inventory was accepted by the City of Bluefield and the Public Service Commission as a correct inventory of the properties of petitioner as of that date. The city employed W. E. Miller, a hydraulic and sanitary engineer, of Madison, Wisconsin, to make a valuation of the properties of petitioner.

That a hearing was had before said Commission, at which hearing evidence was taken, both in support of and in opposition to the said application of petitioner for an increase in rates. The engi-
1819 neers employed by petitioner testified that the value of the plant and properties of the Bluefield Water Works and Improvement Company was Five Hundred and Forty Thousand Dollars ($540,000); and Mr. Miller, the engineer for the City of Bluefield, fixed said value at the sum of Three Hundred and Ninety Two Thousand Dollars ($392,000), both of these valuations being based upon the reproduction new less depreciation theory of valuation.

That the commission discarded the evidence of the witnesses, and arbitrarily fixed a value of petitioner's plant and properties at the sum of Three Hundred and Sixty Thousand Dollars ($360,000), and allowed a rate which was contemplated by the Commission would produce a net return of Six Per Cent (6%) to petitioner, and allow a return of Two Per Cent (2%) upon the value so fixed, to cover annual depreciation.

That an appeal was duly prosecuted by petitioner to the Supreme Court of Appeals of the State of West Virginia, the petition for said appeal alleging that the value placed upon the properties was arbitrarily fixed by the Commission, and that the value thus fixed would deprive petitioner of its property and of just compensation therefor, and of equal protection of the law, in violation of, and contrary to, clause one of the Fourteenth Amendment of the Federal Constitution.

That the Supreme Court of Appeals of West Virginia, on the 31st day of October, 1917, handed down its opinion, order, and decision, which was reported in Volume 81, page 201, West Virginia Reports, (94 Southeastern Reporter, page 121), in which opinion and order,

said Supreme Court dismissed the petition of your petitioner, without prejudice, upon the grounds that said order of the Public Service Commission was a provisional order and not final, and was not subject to the control of the court under section 16, chapter 15-0, of the Code of West Virginia, and holding further in said opin-
1820 ion that, "The valuation of the property of a public service corporation for rate making purposes and the fixing of rates for tolls and charges for the services to be rendered are purely legislative acts and are not the subject of judicial review, except in so far and in so far only as may be necessary to determine whether such rates are void *on* constitutional *or* other grounds."

That the said order of the Public Service Commission required that petitioner submit additional reports and data to the said Commission, and on the 1st day of February, 1918, petitioner made the reports required by the said Commission, and after taking further testimony the commission, on the 17th day of July, 1918, entered its order, affirming its findings as to value, and increasing the rates of tolls and charges allowed petitioner in its former order, but refusing to grant the rates prayed for by petitioner. The proceedings above related before the Public Service Commission of West Virginia are designated by the said Commission as Case No. 368, and are so marked and designated in the record herein.

That the rates so allowed by the Commission did not produce sufficient revenue to afford petitioner the Eight Per Cent (8%) net return which the Commission had adjudged it entitled to receive on the sum of Three Hundred and Sixty Thousand Dollars ($360,000) fixed as the value of petitioner's property, and on the 9th day of June, 1919, petitioner filed its application before said Commission asking for an increase in rates. After a hearing, the Commission granted an increase, but not to the amount asked for by petitioner; and, further, upon application of the City of Bluefield, directed petitioner to make certain additions and extensions to its plant and equipment, all of which is contained in an order made by the said Commission on the 31st day of December, 1919, this last mentioned proceeding being designated by the Public Service Commission as Case No. 895.

1821 Petitioner furtner shows that the rates for tolls and charges fixed by the Commission in the last named order failed to produce an income sufficient to give petitioner a net return equal to the amount designated by said Commission as a proper return to petitioner upon the value of its property; and, on the 27th day of September, 1920, the petitioner filed its application before said Commission, alleging that the value as fixed by the Commission in its order in Case No. 368 was not, at the time the said order was entered, and was not on the said 27th day of September, 1920, the fair value of the properties of the petitioner.

That since the making of said order, petitioner had made large and valuable improvements and betterments to its plant and properties, and that the present true value of said plant and properties was approximately One Million Dollars ($1,000,000). Petitioner also alleged that the order of said Commission was in violation of the

Fourteenth Amendment of the Federal Constitution, and in conflict therewith, in that it deprived petitioner of its property without due process of law, and without just compensation therefor. Petitioner prayed that the Commission review and set aside its findings in Case No. 368, and prayed for a revaluation of its plant and equipment, and prayed that a rate be established which would produce sufficient revenue to pay operating costs, taxes, and provide for depreciation, and afford petitioner a fair return upon the value of its properties.

That a supplemental inventory of the properties of petitioner as of January 1, 1920, was made by Alvord and Burdick, and an estimate of the present fair value of the properties of petitioner for rate making purposes was also made by the firm of Alvord and Burdick, by Mr. L. R. Howson, a member of that firm.

That the City of Bluefield resisted the application of petitioner and demanded that a valuation be made by the engineering department of the Public Service Commission, which was done. Evidence was taken in support of the petition and in support of the answer filed to said petition by the City of Bluefield, and the case came on to be heard upon the records in cases Nos. 368 and 895, and upon the former pleadings, reports, testimony, and orders therein, and upon the application filed on the 27th day of September, 1920, and upon the evidence and reports taken and made in support of and in opposition thereto.

1822

That in accordance with the instructions of the Public Service Commission, the engineer of the Commission made a report upon the value of the properties of petitioner, which report upon value was based upon prices existing from the years 1910 to 1915, and did not include any value for the intangible elements of petitioner's property. The evidence of petitioner's witnesses placed the value of the plant and properties at the sum of One Million One Hundred and Ninety Four Thousand Dollars ($1,194,000) based on price existing in 1920, and the sum of Six Hundred and Twenty Four Thousand Dollars ($624,000) based on prices existing from 1910 to 1915. From these figures the engineer for the petitioner estimated the present fair value to be Nine Hundred Thousand Dollars ($900,000). The engineer of the Commission reported, in accordance with the instructions of the Commission, that the value of the properties of petitioner as of December 31, 1921, was Three Hundred and Ninety Seven Thousand Dollars ($397,000), which sum was based on prices existing from 1910 to 1915, and included no allowance for going value, water rights, or the Bluefield Valley Water Works Company. The last above named items are valued by the petitioner's engineer at One Hundred and Twenty Eight Thousand Dollars ($128,000), the remaining differences between the estimates of the two engineers as to value based on prices existing from 1910 to 1915 is made up of difference in amounts allowed for depreciation, preliminary organization costs, overhead costs, and cutting through pavements over mains. The engineer of the Commission testified that the present value of the plant and properties of petitioner was twice the amount as found by him in his report, plus the value of the several items not in-

1823

cluded by him in his estimate. The Commission found that the value of additions and improvements to the properties of petitioner made since 1915 based on actual cost price was the sum of Sixty Seven Thousand Five Hundred Dollars ($67,500), not including the value of the Bluefield Valley Water Works Company.

That on the 7th day of September, 1921, the Commission handed down its opinion and order, fixing the value of the properties of petitioner at the sum of Four Hundred and Sixty Thousand Dollars ($460,000), and allowing a temporary increase in rates equal to a Fifteen Per cent (15%) surcharge on existing rates.

Petitioner further shows that said valuation so fixed by the Commission is not the present fair value of the properties of petitioner, and is, in fact, the same originally found by the Commission, namely, Three Hundred and Sixty Thousand Dollars ($360,000), which was based on past cost less depreciation, plus the value of additions and betterments made since 1915 to the plant of petitioner; that the said value so found by the Commission is based on past cost less depreciation, and that no allowance is made for appreciation, and that petitioner by said order is deprived of its property without due process of law, and that its property is taken without just compensation, in violation of the provisions of the Federal Constitution found in the Fourteenth Amendment thereto.

Petitioner further shows that a petition was duly filed before the Supreme Court of Appeals of West Virginia, praying that said
1824 order of the Public Service Commission be suspended, a hearing granted, and that said orders entered as aforesaid be reviewed, reversed, and set aside. On the 14th day of December, 1921, the Supreme Court of Appeals of West Virginia handed down its decision, refusing to suspend the aforesaid order, and affirming the same.

That this decision and judgment of the Supreme Court of the State of West Virginia was erroneous, as shown by and upon the grounds stated in the assignment of errors filed herewith.

Petitioner further says that there was drawn in question the validity of the said order of the Public Service Commission on the grounds of its being repugnant to the Constitution *of* the laws of the United States, and the decision of the Supreme Court of West Virginia was in favor of its validity.

Wherefore, said Bluefield Water Works and Improvement Company petitions and prays that a writ of error from the Supreme Court of the United States may issue in this behalf to the Supreme Court of Appeals of the State of West Virginia, for the correction of error so complained of, and that a transcript of record, proceedings, and papers in this cause and matter, duly authenticated, may be sent to the Supreme Court of the United States.

Dated this 14th day of January, 1922.

BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY,

By JOSEPH M. SANDERS,
SANDERS, CROCKETT, FOX & SANDERS,
Its Attorneys.

Writ of Error allowed.

Bond $500—Writ not to operate as a supersedeas.

WM. H. TAFT,
Chief Justice.

Jany. 17th, 1922.

1824½ [Endorsed:] Bluefield Water Works and Improvement Company, Petitioner, vs. Public Service Commission et al., Respondents. Petition for Writ of Error. Sanders & Crockett, Attorneys at Law, Bluefield, West Virginia.

1825 The Supreme Court of Appeals of the State of West Virginia.

BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY, Petitioner,

vs

PUBLIC SERVICE COMMISSION et al., Respondents.

Assignment of Error in Connection with Its Petition for a Writ of Error from the Supreme Court of the United States to the Supreme Court of Appeals of the State of West Virginia.

The Bluefield Water Works and Improvement Company, in connection with its petition for a writ of error filed herewith, makes the following assignment of error, which said Bluefield Water Works and Improvement Company avers occurred in the final order, opinion and decision of the Supreme Court of Appeals of the State of West Virginia herein, dated the 14th day of December, 1921, and in the proceedings prior thereunto in this cause before the Public Service Commission of the State of West Virginia, and in the final order and opinion of said Public Service Commission of date the 7th day of September, 1921.

Petitioner avers that it is a corporation, created and existing under and by virtue of the laws of the State of West Virginia, and that it is engaged in furnishing water to the City of Bluefield and to the inhabitants thereof; that it is a public service corporation, and, as such, is subject to the control and regulation of the Public Service Commission of West Virginia, under the terms and provisions
1826 of Chapter 15-O of Barnes' Code of West Virginia, 1918, which said chapter of said Code creates the said Public Service Commission, and invests therein control of all public service corporations in the State of West Virginia.

The errors herein complained of and assigned occurred in the final orders of the said Public Service Commission of West Virginia entered upon an application of petitioner for an increase in rates, and in the opinion, decision and order of the Supreme Court of Appeals of the State of West Virginia upon an appeal under said chapter of the Code of West Virginia to the Supreme Court of Appeals of the

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State of West Virginia, seeking to have said order suspended, reviewed and reversed.

Petitioner further says that the Supreme Court of Appeals of the State of West Virginia is the highest Court of the State of West Virginia in which a decision in this suit and matter could be had, and that in the proceedings before the said Supreme Court of Appeals there was drawn in question the validity of the order of the said Public Service Commission as above referred to, on the ground of its being repugnant to the Constitution of the United States, and the decision of the Supreme Court of Appeals of the State of West Virginia is in favor of the validity of the said order.

The assignment of errors complained of in the above described proceedings is as follows, to-wit:

(1) The Public Service Commission of the State of West Virginia erred in its order entered on the 17th day of September, 1921, in placing a value of Four Hundred and Sixty Thousand Dollars ($460,000) upon the plant and properties of the Bluefield Water Works and Improvement Company, used and useful in the service of the public, as a valuation and basis upon which to predicate its findings for fixing a fair rate to this petitioner for its services rendered the public, and in disregarding the reports and testimony of the witnesses as to the present actual fair value of the plant and
1827 equipment of the petitioner;

(2) The Public Service Commission of West Virginia erred in disregarding the evidence of the witnesses as to the present fair value of the plant and property of petitioner, and in failing and refusing to fix the value of the plant and properties of the petitioner at the sum of Nine Hundred Thousand Dollars ($900,000), which sum is supported by the evidence of the witnesses testifying in said matter, and in arbitrarily fixing the value of the plant and properties of petitioner at the sum of Four Hundred and Sixty Thousand Dollars ($460,000);

(3) The Public Service Commission of West Virginia erred in taking past cost, less depreciation, as the basis of determining the value of the plant and property of petitioner prior to the year 1915, and in adding to the value thus found the cost of additions since the year 1915, less depreciation;

(4) The Public Service Commission of West Virginia erred in disregarding and refusing to consider the evidence as to the present value of the plant determined in accordance with present day and existing prices, and in disregarding the testimony of witnesses as to the value of the plant and properties of petitioner calculated upon said basis, and in basing all calculations as to present value upon past or pre-war cost;

(5) The Public Service Commission of West Virginia erred in taking average prices existing from the years 1910 to 1915 as a basis for determining present value of the plant and properties of peti-

tioner, and in refusing to take prices as existing in 1920 as a basis for determining the present value of petitioner's plant and properties;

(6) The Public Service Commission of West Virginia erred in refusing to allow this petitioner a fair and adequate sum for the value of its springs and water rights, which value was placed by the
1828 witnesses at the sum of Fifty Thousand Dollars ($50,000), and in limiting the value of the springs belonging to petitioner and constituting a large part of the source of supply of water furnished by said petitioner to the actual value of the land on which such springs are located, and refusing to allow to petitioner any value for its said springs and water rights;

(7) The Public Service Commission of West Virginia erred in refusing to allow petitioner a fair and adequate sum in the valuation of its plant for the following items: Overhead expenses, operating capital, cutting through pavement to lay mains, and other items set out in the valuation of the plant by the witnesses for petitioner;

(8) The Public Service Commission of West Virginia erred in refusing to consider the present value of the plant and properties of petitioner determined by reproduction new less depreciation theory of valuation, and in its order entered herein on the 24th day of April, 1917, arbitrarily fixing the value of the plant and properties of petitioner at the sum of Three Hundred and Sixty Thousand Dollars ($360,000), which sum was an amount less than the value fixed by any witness testifying before said Commission, and in its order of September 7, 1921, fixing the value of the plant and properties of petitioner at the said sum of Three Hundred and Sixty Thousand Dollars ($360,000) so fixed by it, plus the sum of Ninety Two Thousand Dollars ($92,000) for additions and betterments added to the said plant by petitioner since the 1st day of January, 1915;

(9) The Public Service Commission of West Virginia erred in holding that petitioner is entitled to receive a return of only Eight Per cent (8%) upon the value determined by the Commission, as aforesaid, as the actual present value of the plant, which said return of Eight Per cent (8%) includes an allowance of Two Per cent (2%) for depreciation, making the net return to petitioner Six Per cent (6%) upon the value of the plant as determined by said
1829 Commission, and the Commission erred in refusing to increase the rate of return to petitioner upon the value of its plant to correspond with the shown increase in interest rates and returns upon other investments;

(10) The Public Service Commission of West Virginia erred in its order by refusing to allow your petitioner a fair and just return upon the value of its plant, used and useful in the service of the public, and by its order deprives your petitioner of just compensation, and deprives your petitioner of its property without due process of law and without just compensation therefor, and denies to your petitioner the equal protection of the law, and the said order

of said Public Service Commission is confiscatory, and hence is in conflict with, and repugnant to, the Fourteenth Amendment of the Constitution of the United States;

(11) The Supreme Court of Appeals of the State of West Virginia erred in refusing to suspend the order of the said Public Service Commission, and in affirming the said order;

(12) The Supreme Court of Appeals of the State of West Virginia erred in holding that investment less depreciation or past cost less depreciation is the true basis for determining value of a public utility for rate making purposes;

(13) The Supreme Court of Appeals of the State of West Virginia erred in holding that the true basis for rate making purposes of a public utility is the actual fair value of its investment at the time used and useful in the business of furnishing service to the public;

(14) The Supreme Court of Appeals of the State of West Virginia erred in holding that the original cost of a public utility in connection with its history and growth and the value of the service rendered, constitute the principal elements to be considered in connection with rate making for the service of the public;

(15) The Supreme Court of Appeals of the State of West Virginia erred in refusing to consider the value of the plant and properties of petitioner as determined by the reproduction new
1830 less depreciation theory of valuation;

(16) The Supreme Court of Appeals of the State of West Virginia erred in holding that the value of the springs which form a large part of the water supply of petitioner is limited to the actual amount invested in the land whereon said springs are located, and in refusing to allow to petitioner the sum of Fifty Thousand Dollars ($50,000) as the value of said springs and water rights;

(17) The Supreme Court of Appeals of the State of West Virginia erred in holding that the value of Four Hundred and Sixty Thousand Dollars ($460,000), the sum fixed by the Commission, is the true present value of the plant of petitioner for rate making purposes, and in refusing to allow to petitioner the sum of Nine Hundred Thousand Dollars ($900,000) as the value of its plant and properties;

(18) The Supreme Court of Appeals of the State of West Virginia erred in holding that the order of the Public Service Commission of West Virginia fixing the value of the plant of petitioner, used and useful in the service of the public, at the sum of Four Hundred and Sixty Thousand Dollars ($460,000), in refusing to your petitioner an adequate sum for its springs and water rights, overhead expenses, operating capital, cutting through pavement to lay mains, and other items, and set out in the evidence and reports of the witnesses, was not confiscatory and in violation of the first

section of the Fourteenth Amendment of the Federal Constitution, and the Court erred in holding that the said order of the Public Service Commission does not deprive your petitioner of its property without due process of law and in violation of the provisions of the Federal Constitution;

(19) The Supreme Court of Appeals of the State of West Virginia errs in holding that the provisions of section 16, chapter 15-0 of the Code of West Virginia, 1918, which said chapter creates the Public Service Commission of West Virginia, and vests in it the control and regulation of all public service corporations within the
1831 State of West Virginia, and section 16 of said chapter, which gives to any public service corporation aggrieved by an order of said public service commission, the right to petition the said Supreme Court of Appeals of the State of West Virginia for a suspension of said order and a hearing upon said petition before the said Supreme Court, and a decision by the said Supreme Court in the matter in controversy as may seem to said Court to be just and right, gives to petitioner the right to have the orders of the Public Service Commission reviewed only when said findings and orders of said Public Service Commission are not based upon evidence, and refusin, to grant to petitioner a judicial review of the findings of said Commission, thus depriving petitioner of due process of law in violation of the Federal Constitution;

(20) The Supreme Court of Appeals of the State of West Virginia errs in holding that the valuation of the property of a public service corporation and prescribing rates for tolls and charges for services to be rendered are purely legislative acts, not subject to judicial review, except in so far and in so far only as may be necessary to determine whether such rates are void on constitutional or other grounds;

(21) Petitioner further says that section 16 of Chapter 15-O of the Code of West Virginia, as construed by the Supreme Court of Appeals of the State of West Virginia, as aforesaid, deprives petitioner of due process of law, and is in conflict with, and repugnant to, the Fourteenth Amendment to the Federal Constitution; and

(22) Petitioner further says that the judgment of the Supreme Court of Appeals of the State of West Virginia entered herein is repugnant to, and in conflict with, Section 1 of the Fourtenth Amendment of the Constitution of the United States, which declares, "No state shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; nor shall
1832 any state deprive any person of life, liberty, or property, without due process of law;"

Wherefore, said Bluefield Water Works and Improvement Company prays that a writ of error may issue from the Supreme Court of the United States to the Supreme Court of Appeals of the State of West Virginia, and further prays that the Supreme Court of the

United States will reverse the said final order and judgment of the Supreme Court of Appeals of the State of West Virginia, and that the same be annulled, set aside, and held for naught, and that it may be restored to all things lost by said final order and judgment, and may have such other and further relief as may be proper and just.

Dated this 14th day of January, 1922.

BLUEFIELD WATER WORKS AND IMPROVEMENT COMPANY,
By JOSEPH M. SANDERS,
SANDERS, CROCKETT, FOX & SANDERS,
Its Attorneys.

1832½ [Endorsed:] Bluefield Water Works and Improvement Company, Petitioner, vs. Public Service Commission, et al., Respondents. Assignment of Errors. Sanders & Crockett, Attorneys at Law, Bluefield, West Virginia.

1833 Duplicate.

Know all men by these presents, That we, Bluefield Water Works and Improvement Company, as principal, and the United States Fidelity and Guaranty Company a corporation under the laws of the State of Maryland, as sureties, are held and firmly bound unto Public Service Commission of the State of West Virginia et al., in the full and just sum of Five Hundred ($500.00) dollars, to be paid to the said Public Service Commission of the State of West Virginia et al., its certain attorney, Successors, or assigns; to which payment, well and truly to be made, we bind ourselves, our heirs, executors, and administrators, jointly and severally, by these presents. Sealed with our seals and dated this eighteenth day of January, in the year of our Lord one thousand nine hundred and twenty-two.

Whereas, lately at a hearing in the Supreme Court of Appeals of the State of West Virginia, wherein said Bluefield Water Works and Improvement Company was petitioner and Public Service Commission of West Virginia et al., were respondent-, there was rendered against the said Bluefield Water Works and Improvement Company, a judgment affirming the order of said Public Service Commission of the State of West Virginia et al., and the said Bluefield Water Works and Improvement Company having obtained a writ of error from the Chief Justice of Supreme Court of U. S. to reverse the judgment in the aforesaid suit, and a citation directed to the said Public Service Commission of the State of West Virginia et al., citing and admonishing them to be and appear at a Supreme Court of the United States, at Washington, within thirty days from the date thereof.

Now, the condition of the above obligation is such, That if the said Bluefield Water Works and Improvement Company shall prosecute its said writ of error to effect, and answer all costs if it fail to make

its plea good, then the above obligation to be void; else to remain in full force and virtue.

BLUEFIELD WATER WORKS AND IMPROVEMENT CO., [SEAL.]
By A. G. FOX,
Atty.,

[Seal United States Fidelity & Guaranty Company, Incorporated 1896.]

UNITED STATES FIDELITY AND GUARANTY CO., [SEAL.]
By LEE B. NOSHER,
Attorney in Fact.

Sealed and delivered in presence of:

R. M. WATERS.
M. M. LOCKHART.
L. R. SAUZ.

Approved by:

WM. H. TAFT,
Chief Justice of the United States.

1834 UNITED STATES OF AMERICA, *ss:*

[Seal of the Supreme Court of the United States.]

The President of the United States of America to the Honorable the Judges of the Supreme Court of Appeals of the State of West Virginia, Greeting:

Because in the record and proceedings, as also in the rendition of the judgment of a plea which is in the said Supreme Court of Appeals, before you, or some of you, being the highest court of law or equity of the said State in which a decision could be had in the said suit between Bluefield Water Works and Improvement Company, petitioner, and Public Service Commission of the State of West Virginia et al., respondents, wherein was drawn in question the validity of a treaty or statute of, or an authority exercised under, the United States, and the decision was against their validity; or wherein was drawn in question the validity of a statute of, or an authority exercised under, said State, on the ground of their
1835 being repugnant to the Constitution, treaties, or laws of the United States, and the decision was in favor of their validity; a manifest error hath happened to the great damage of the said Bluefield Water Works and Improvement Company, as by its complaint appears. We being willing that error, if any hath been, should be duly corrected, and full and speedy justice done to the parties aforesaid in this behalf, do command you, if judgment be therein given, that then under your seal, distinctly and openly,

you send the record and proceedings aforesaid, with all things concerning the same, to the Supreme Court of the United States, together with this writ, so that you have the same in the said Supreme Court at Washington, within — days from the date hereof, that the record and proceedings aforesaid being inspected, the said Supreme Court may cause further to be done therein to correct that error, what of right, and according to the laws and customs of the United States, should be done.

Witness the Honorable William H. Taft, Chief Justice of the United States, the eighteenth day of January, in the year of our Lord one thousand nine hundred and twenty-two.

WM. R. STANSBURY,
Clerk of the Supreme Court of the United States.

Allowed by

WM. H. TAFT,
Chief Justice of the United States.

[Endorsed:] Supreme Court of the United States, October Term, 191-. Writ of Error.

1836 UNITED STATES OF AMERICA, *ss:*

To Public Service Commission of the State of West Virginia et al., Greeting:

You are hereby cited and admonished to be and appear at a Supreme Court of the United States, at Washington, within thirty days from the date hereof, pursuant to a writ of error, filed in the Clerk's Office of the Supreme Court of Appeals of the State of West Virginia, wherein Bluefield Water Works and Improvement Company is plaintiff in error and you are defendants in error, to show cause, if any there be, why the judgment rendered against the said plaintiff in error as in the said writ of error mentioned, should not be corrected, and why speedy justice should not be done to the parties in that behalf.

Witness, the Honorable William H. Taft, Chief Justice of the United States, this eighteenth day of January, in the year of our Lord one thousand nine hundred and twenty-two.

WM. H. TAFT,
Chief Justice of the United States.

On this Twentieth day of January, in the year of our Lord one thousand nine hundred and twenty-two, personally appeared before me, the subscriber A. G. Fox, and makes oath that he delivered a true copy of the within citation to the within named Public Service Commission by delivering a true copy thereof to R. B.

Bernheime, Secretary of said Public Service Commission, said secretary being designated by law as the person on whom service against said Public Service Commission may be served. Said copy having been delivered to said R. B. Bernheime on the 19th day of January, 1922.

A. G. FOX.

Sworn to and subscribed the Twentieth day of January, A. D. 1922.

ALLEN U. BALL,
Notary Public, D. C.

I hereby acknowledge and accept due and legal personal service of the within writ, on this the 19th day of January, 1922.

THE CITY OF BLUEFIELD,
By RUSSELL S. RITZ,
Its Attorney.

1837 UNITED STATES OF AMERICA, *ss:*

To Public Service Commission of the State of West Virginia et al., Greeting:

You are hereby cited and admonished to be and appear at a Supreme Court of the United States, at Washington, within thirty days from the date hereof, pursuant to a writ of error, filed in the Clerk's Office of the Supreme Court of Appeals of the State of West Virginia, wherein Bluefield Water Works and Improvement Company is plaintiff in error and you are defendants in error, to show cause, if any there be, why the judgment rendered against the said plaintiff in error as in the said writ of error mentioned, should not be corrected, and why speedy justice should not be done to the parties in that behalf.

Witness, the Honorable William H. Taft, Chief Justice of the United States, his eighteenth day of January, in the year of our Lord one thousand nine hundred and twenty-two.

(Signed) WILLIAM H. TAFT,
Chief Justice of the United States.

1838 Due and legal service of a true copy of the within citation on the 19th day of January, 1922, is hereby accepted by and on behalf of the within named Public Service Commission, by the undersigned, the Secretary of the said Commission, who is authorized by law to accept service by and on behalf of the said Commission.

Dated this 19th day of January, 1922.

R. B. BERNHEIM,
Secretary of the Public Service Commission of West Virginia.

1839 BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY, Petitioner,

vs.

PUBLIC SERVICE COMMISSION OF THE STATE OF WEST VIRGINIA et al., Respondents.

Stipulation of Counsel.

To the Clerk of the Supreme Court of the State of West Virginia:

It is hereby stipulated and agreed by and between the undersigned counsel, representing the above named petitioner and respondents, that the following portions of the record in the above named cause and matter shall constitute the transcript of the record in the said cause and matter on a writ of error and writ of certiorari to the Supreme Court of the United States, and you are directed to transmit only the papers and documents hereinafter designated to the said Clerk of the Supreme Court of the United States.

(1) Pleas, orders, and petition in the Supreme Court in Public Service Commission case 1138, pp. 1-8.

Pleas, orders, and petition in the Supreme Court in Public Service Commission case 368, pp. 9-13.

(2) Petition of Bluefield Water Works & Improvement Company, P. S. C. case 368, filed April 14, 1915, pp. 14-22.

(3) Appearance by City of Bluefield and request for inventory and report on investment, pp. 23-27.

1840 (4) Transcript of evidence taken at Bluefield, West Virginia, July 24, 1916, pp. 28-449.

(5) Inventory of properties of Bluefield Water Works & Improvement Company by John W. Alvord, January 1, 1915, pp. 450-653.

(6) Report of value of the Bluefield Water Works & Improvement Company John W. Alvord, January 1, 1915, pp. 654-802.

(7) Preliminary estimates of water supply as bearing on value of springs of Bluefield Water Works & Improvement Company, John W. Alvord, February, 1916, pp. 803-815.

(8) Investigation and report of past cost, John W. Alvord, January 1, 1916, pp. 816-1130.

(9) Discussion of differences in estimates of John W. Alvord and W. E. Miller, July 1916, pp. 1131-1164.

(10) Report of division of investment John W. Alvord, pp. 1165-1172.

(11) Rules and regulations of Bluefield Water Works & Improvement Company, pp. 1173-1204.

(12) Report of value of the properties of the Bluefield Water Works & Improvement Company, W. E. Miller, pp. 1205-1258.

(13) Franchise of the Bluefield Water Works & Improvement Company, pp. 1259-1260.

(14) Report by H. E. Nease, January 20, 1917, with exhibits, pp. 1261-1279.

1841 (15) Report of H. E. Nease, February 20, 1917, pp. 1280-1287.

(16) Supplemental reports A and B by W. E. Miller, August 16, 1916, pp. 1288-1339.

(17) Report, opinion and order of Public Service Commission of West Virginia, April 24, 1917, pp. 1340-1361.

(18) Order, opinion and certificate of Supreme Court of Appeals of West Virginia, in re case P. S. C. case 368, pp. 1362-1368.

(19) Report of Bluefield Water Works & Improvement Company made February 1, 1918, pp. 1369-1370.

(20) Report of H. E. Nease filed April 14, 1918, pp. 1371-1393.

(21) Transcript of evidence taken at Charleston, West Virginia, April 4, 1918, pp. 1394-1432.

(22) Report and opinion of Public Service Commission made July 17, 1918, pp. 1433-1441.

(23) Petition of Bluefield Water Works & Improvement Company to Public Service Commission of West Virginia, P. S. C. case 895, pp. 1442-1447.

(24) Answer of City of Bluefield, pp. 1448-1452.

(25) Replication of Bluefield Water Works & Improvement Company, pp. 1453-1458.

(26) Amended petition of Bluefield Water Works & Improvement Company, pp. 1459-1461.

1842 (27) Transcript of evidence taken July 9, 1919, pp. 1462-1512.

(28) Report of H. E. Nease, September 22, 1919, pp. 1513-1516.

(29) Report of chief engineer of Public Service Commission, pp. 1517-1520.

(30) Transcript of evidence taken at Charleston, West Virginia, November 14, 1919, pp. 1521-1545.

(31) Order of Public Service Commission December 31, 1919, pp. 1546-1548.

(32) Application of Bluefield Water Works & Improvement Company to the Public Service Commission of West Virginia, P. S. C. case 1138, pp. 1549-1554.

(33) Answer of City of Bluefield, pp. 1555-1558.

(34) Replication of Bluefield Water Works & Improvement Company, pp. 1559-1565.

(35) Transcript of evidence taken at Charleston, West Virginia January 18, 1921, pp. 1566-1606.

(36) Exhibits Howson 1-7, pp. 1607-1612.

(37) Supplement to Inventory of Bluefield Water Works & Improvement Company November, 1920, pp. 1613-1629.

(38) Report on value of the Bluefield Water Works & Improvement Company July 1, 1920, pp. 1630-1653.

1843 (39) Analysis of income and operating statistics January 5, 1921, pp. 1654-1662.

(40) Report W. Q. Gallaher, Chief Engineer Public Service Commission, December 30, 1920, pp. 1663-1699.

(41) Report of the H. E. Nease, Statistician, March 1, 1921, pp. 1700-1704.

(42) Transcript of Evidence taken May 20, 1921, pp. 1705-1781.

(43) Exhibits marked "Rhodes," pp. 1782-1783.

(44) Report and order of Public Service Commission of West Virginia, in case 1138, made December 7, 1921, pp. 1784-1804.

(45) Certificate of R. B. Bernheim, Secretary of Public Service Commission, p. 1805.

(46) Pleas, orders and opinion of Supreme Court of West Virginia, P. S. C. 1138, pp. 1806-1815.

(47) Certificate of W. B. Mathews, Clerk of the Supreme Court of Appeals of West Virginia, p. 1816.

SANDERS, CROCKETT, FOX & SANDERS,
Attorneys for Bluefield Water Works & Improvement Company, Petitioner.
RUSSELL S. RITZ,
Attorney for City of Bluefield, Respondent.
F. M. LUNZUY,
Attorney for Public Service Commission of West Virginia.

1844 [Endorsed:] 710—28665. Stipulation of counsel. Bluefield Water Works and Improvement Company, v. Public

Service Commission, et al. Sanders & Crockett, Attorneys at Law, Bluefield, West Virginia.

1845 STATE OF WEST VIRGINIA:

In obedience to the commands of the within writ, I, Wm B. Mathews, Clerk of the Supreme Court of Appeals of West Virginia, herewith transmit to the Supreme Court of the United States a true and complete transcript of the record in the case of Bluefield Water Works and Improvement Company against the Public Service Commission of the State of West Virginia and another, as the same appears upon the records of my said office, and as certified to my said office by the Secretary of the Public Service Commission of the State of West Virginia, including only such portions of said record as are designated by the stipulation in writing and made part hereof, together with all things concerning the same, which transcript is comprised of pages number from 1 to 1840, inclusive.

In witness whereof, I have hereunto set my hand and affixed the seal of said Court this 19th day of January, 1922, and in the 59th year of the State.

[Seal of the Supreme Court of Appeals, West Virginia.]

WM. B. MATHEWS,
Clerk Supreme Court of Appeals of West Virginia.

1846

Law Offices

Sanders, Crockett, Fox & Sanders,

Bluefield, West Virginia.

Joseph M. Sanders, George P. Crockett, Alfred G. Fox, Joseph M. Sanders, Jr.

516-22 Law & Commerce Building.

January 12, 1922.

Clerk of the Supreme Court of the United States,
Washington, D. C.

DEAR SIR:

Bluefield Water Works & Improvement Company vs. Public Service Commission et al.

The undersigned counsel have agreed that such photographs and pictures as are contained in the record in the above case are not essential to the determination of the questions involved either on writ of error or certiorari and that it is not necessary that the said photographs and pictures contained in the record be reproduced in the printed record. The signature of the undersigned counsel is

authority to you to omit the pictures and photographs from the printed record.

SANDERS, CROCKETT, FOX & SANDERS,
Attorneys for Bluefield Water Works and Improvement Company.
RUSSELL S. RITZ,
Attorney for the City of Bluefield.
F. M. LUNZUY,
Attorney for Public Service Commission.

1847 [Endorsed:] File No. 28665. Supreme Court U. S., October Term, 1921. Term No. 710. Bluefield Water Works & Improvement Co., P. E., vs. Public Service Comm'n et al. Stipulation to omit parts of record in printing. Filed Jan. 20, 1922.

Endorsed on cover: File No. 28665. West Virginia Supreme Court of Appeals. Term No. 710. Bluefield Water Works and Improvement Company, plaintiff in error, vs. Public Service Commission of the State of West Virginia et al. Filed January 20th, 1922. File No. 28665.

IN THE

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1922.

No.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY, Petitioner,

vs.

PUBLIC SERVICE COMMISSION, Et Al., Respondents.

PETITION FOR WRIT OF CERTIORARI.

TO THE HONORABLE CHIEF JUSTICE AND THE ASSOCIATE JUSTICES OF THE SUPREME COURT OF THE UNITED STATES OF AMERICA:

The petition of the Bluefield Water Works & Improvement Company respectfully shows that it is a corporation created and existing under and by virtue of the laws of the State of West Virginia, and that it is engaged in furnishing water to the City of Bluefield, a municipal corporation, and the inhabitants thereof, and that by virtue of the business in which it is engaged and the provisions of the laws of the State of West Virginia, it is a public service corporation, and as such is subject to the control and regulation of the Public Service Commission of West Virginia, under the terms and provisions of Chapter 15-0 of Barnes' Code of West Virginia, 1918, of which said chapter Section 1 creates

the said Public Service Commission, and Division "D" of the third section of said chapter confers upon said Public Service Commission jurisdiction over petitioner, and is in part as follows:

> "The jurisdiction of the Commission shall extend to and include: (d) hydro-electric companies for the generation and transmission of light, heat or power, and water companies and municipalities furnishing water."

Petitioner further shows that Section 16 of Chapter 15-0 of said Code gives any party aggrieved by a final order of the said Commission the right to petition to the Supreme Court of Appeals of West Virginia within thirty days after the entry of such order, praying for a suspension of the order; and further provides that the Court shall fix a time for the hearing on the application, and that after such hearing if the Court is of the opinion that a suspending order should issue that bond shall be required, and that the Clerk of the Commission shall file with the Clerk of the Supreme Court of Appeals the original record or certified copy thereof, of all the proceedings before the Commission and that after a hearing the said Supreme Court of Appeals shall decide the matter in controversy as may seem to be just and right.

Petitioner further shows that no other method or proceeding for an appeal from or review of the findings and orders of the said Public Service Commission is provided under the laws of the State of West Virginia.

Petitioner further shows that the said Supreme Court of Appeals of West Virginia is the highest Court in said State in which a decision in this matter and cause could be

had, and that in the proceedings before the Public Service Commission and in the petition to the Supreme Court of Appeals for a suspension of the said final order of the Public Service Commission and in the petition to the Supreme Court of Appeals for a suspension of the said final order of the Public Service Commission entered herein petitioner set up or claimed that it was deprived of rights guaranteed to it by the Fourteenth Amendment of the Consitution of the United States.

NATURE OF THE CASE.

This is a matter or proceeding brought in accordance with the laws of West Virginia by petitioner before the Public Service Commission of West Virginia asking for a revaluation of its plant and an increase in the rates charged by petitioner to consumers for water furnished, and the proceedings in the Supreme Court of Appeals of West Virginia upon a petition for a suspension of and appeal from the final order of the Public Service Commission entered herein fixing the value of the plant and properties of petitioner for rate making purposes at the sum of Four Hundred and Sixty Thousand Dollars, ($460,000.00).

THE MAIN POINTS INVOLVED IN THE CASE.

The order of the Public Service Commission of the State of West Virginia and the decision of the Supreme Court of Appeals of West Virginia affirming the said order take the plant and property of petitioner for public use without just compensation, and are in violation of the provisions of the Fourteenth Amendment of the Consitution of the United States in that they deprive petitioner of due process of law

and deny to petitioner the equal protection of the law in violation of the provisions of the said Fourteenth Amendment.

(1) The sum of Four Hundred and Sixty Thusand Dollars, ($460,000.00) fixed by the Public Service Commission of the State of West Virginia in its order entered on the 17th day of September, 1921, is not the fair present value of the plant and properties of the petitioner used and useful in the service of the public, and is not a fair valuation or basis upon which to predicate its findings as to a fair rate of return for petitioner for services rendered the public.

(2) The sum of Four Hundred and Sixty Thousand Dollars, ($460,000.00) fixed by the said Commission as the present value of the plant and properties of the petitioner is not supported by the evidence of any witness testifying before the said Commission, and the evidence adduced before said Commission establishes the value of the plant and properties of petitioner at the sum of Nine Hundred Thousand Dollars, ($900,000.00). This sum is sustained by all the evidence as being the present fair value of the plant and properties of the petitioner for rate making purposes.

(3) The Public Service Commission of West Virginia took past cost, less depreciation, as the basis of determining the value of the plant and property of petitioner prior to the year 1915, and added to the value thus found the cost of additions and betterments made since the year 1915 and depreciated the cost of said additions and betterments; whereas, the said Commission should have based its findings as to the present value of the plant and properties of petitioner upon present day and existing prices and not have disregarded the testimony of witnesses as to the value of

the plant and properties of petitioner calculated upon the basis of present day and existing prices, nor should the investigation have been restricted to evidence as to cost and prices existing from the years 1910 to 1915.

(4) The petitioner is deprived of its property without just compensation for the reason that present value of the plant and property of a public utility must be determined by a rate making body for the purpose of fixing rates. Prices existing from the years 1910 to 1915 do not constitute a proper basis for determining present value, and by such method of determining value petitioner is charged with depreciation and no allowance is made for appreciation.

(5) The Public Service Commission of West Virginia deprived petitioner of its property without just compensation and took the property of the petitioner without due process of law in refusing to allow to petitioner the sum of Fifty Thousand Dollars, ($50,000.00) for springs and water rights owned by petitioner, and in limiting the value of said springs and water rights to the actual value of the land on which said springs are located.

(6) The Public Service Commission of West Virginia refused to consider the evidence as to the present value of the plant and properties of petitioner based upon the reproduction new, less depreciation theory of valuation, and attempted to determine present value upon a basis of past cost less depreciation.

(7) A return of eight per cent. upon the value of a public utility, which includes two per cent. for annual depreciation, is not an adequate return. Rates determined on this basis by the Commission and affirmed by the Court

below, deprive petitioner of its property without due process of law, and deny to petitioner the equal protection of the law.

(8) The Supreme Court of Appeals of West Virginia affirmed the said order of the said Public Service Commission and further held that investment less depreciation or past cost less depreciation is the true basis for determining value of a public utility for rate making purposes. The Supreme Court of Appeals of West Virginia also held that the actual fair value of the investment of a public utility at the time used and useful in the business of furnishing service to the public is the true basis for rate making.

(9) The Supreme Court of Appeals of West Virginia also held that the reproduction new less depreciation theory of valuation is not a fair method of determining value of a public service utility.

(10) The Supreme Court of Appeals of West Virginia holds that the orders of the Public Service Commission are not subject to judicial review except insofar, and insofar only, as may be necessary to determine whether such rates are void on constitutional or other grounds.

(11) The Supreme Court of Appeals of West Virginia in its final decision and order herein deprives petitioner of its property without due process of law and denies to petitioner the equal protection of the law, in violation of the provisions of the Fourteenth Amendment of the Constitution of the United States, wherein it is provided; "Nor shall any State deprive any person of life, liberty, or property without due process of law, (nor shall any State)

deny to any person within its jurisdiction the equal protection of the law."

PROCEEDINGS BEFORE THE PUBLIC SERVICE COMMISSION AND IN THE COURT BELOW.

On the 14th day of April, 1915, petitioner filed its application before the Public Service Commission of West Virginia praying for an increase in rates, to which application the City of Bluefield appeared and resisted the granting of the increase in rates prayed for in said application, and demanded an inventory and valuation of the plant and properties of the petitioner. In compliance with said demand and request petitioner employed the firm of Alvord and Burdick, Hydraulic and Sanitary Engineers, of Chicago, Illinois, who made an inventory of the properties of the petitioner as of January 1st, 1915, which inventory was accepted and adopted by the City of Bluefield and the Public Service Commission as a correct inventory of the properties of petitioner as of that date. The City of Bluefield employed W. E. Miller, a Hydraulic and Sanitary Engineer, of Madison, Wisconsin, to make a valuation of the properties of petitioner. Hearings were had before said Commission upon the said application of petitioner and answer of the City of Bluefield, at which hearing evidence was taken in support of the pleadings filed as aforesaid; the Engineers employed by petitioner testified that the value of the plant and properties of the Bluefield Water Works & Improvement Company was Five Hundred and Forty Thousand Dollars, ($540,000.00); W. E. Miller, the Engineer of the City of Bluefield, fixed said value at the sum of

Three Hundred and Ninety Two Thousand Dollars, ($392,000.00); both of these values being based upon the reproduction new less depreciation theory of valuation. The Commission discarded the evidence of the witnesses and fixed the value of petitioner's plant and properties at the sum of Three Hundred and Sixty Thousand Dollars ($360,000.00) and prescribed a schedule of rates to be charged by petitioner which the Commission contemplated would produce a net return of six per cent. to petitioner, and allow a return of two per cent. upon the value so fixed to cover annual depreciation. Petitioner being aggrieved by the order of the Commission prosecuted an appeal to the Supreme Court of Appeals of West Virginia, the petition for said appeal alleging that the value placed upon the properties was arbitrarily fixed by the Commission, and that by the said order so entered by the said Public Service Commission petitioner was deprived of the equal protection of the law, and was deprived of its property without due process of law, in violation of and contrary to the Fourteenth Amendment of the Constitution of the United States. The above proceedings are designated and shown in the record herein as Case No. 368.

The Supreme Court of Appeals of West Virginia on the 31st day of October, 1917, entered its order and opinion dismissing the petition of your petitioner without prejudice, upon the grounds that the said order of the Public Service Commission was a provisional order, and not final, and was not subject to the control of the Court under Section 16, Chapter 15-0 of the Code of West Virginia hereinabove set out.

Petitioner further shows that the rates so fixed by the

Public Service Commission of West Virginia did not produce sufficient revenue to afford petitioner a return of eight per cent. over and above operating costs and necessary charges, and that on the 9th day of June, 1919, petitioner filed an application before said Commission asking for an increase in rates. This application was also resisted by the City of Bluefield, and after a hearing thereon the Commission granted an increase, but not the amount prayed for by petitioner, and further upon application of the City of Bluefield directed petitioner to make certain additions and extensions to its plant and equipment; this last mentioned proceeding being designated by the Public Service Commission as Case No. 895.

Petitioner further shows that the rates for tolls and charges fixed by the Commission in the last named order failed to produce the income designated by the Commission as the amount properly allowable to petitioner, and on the 27th day of September, 1920, petitioner filed its application before said Commission alleging that the value as fixed by the Commission in its order in Case No. 368 was not, at the time the said order was entered, and was not on the said 27th day of September, 1920, the fair value of the plant and property of the petitioner and that the said order of the Commission deprived petitioner of its property without due process of law, and of the equal protection of the law, in violation of and contrary to the Fourteenth Amendment of the Federal Constitution.

Petitioner further set out in its application that since the making of the said order by the Public Service Commission large and valuable improvements, betterments and additions had been made to its plant and properties, and

that the present true value of its plant and properties was approximately One Million Dollars, ($1,000,000.00). Petitioner prayed for a revaluation of its plant and properties, and for a review and revision of the order of the said Public Service Commission entered in said Case, No. 368, and prayed that a rate be allowed to petitioner which would produce sufficient revenue to pay operating costs, taxes, and provide for depreciation, and also afford petitioner a fair return upon the value of its properties. The City of Bluefield appeared to this application also, denying the allegations contained therein, and resisting an increase in the rates allowed your petitioner. Hearings were had before the said Public Service Commission and a supplemental inventory of the properties of petitioner as of January 1st, 1920, was made by Alvord and Burdick, and estimates of the present fair value of the properties of petitioner for rate making purposes was also made by the said firm of Alvord and Burdick and introduced as evidence before the said Commission, and made a part of the record. The evidence, reports, testimony and orders entered in cases No. 368 and No. 895 were made part of the record before the Commission, and the case came on to be heard upon all of the proceedings had therein. The evidence of the witnesses for petitioner placed the value of the plant and properties at the sum of One Million One Hundred and Ninety Four Thousand Dollars, ($1,194,000.00), determined by the reproduction new less depreciation theory of valuation, determined in accordance with prices existing in 1920, and by the same method of valuation placed the value of the plant at the sum of Six Hundred and Twenty Four Thousand Dollars, ($624,000.00) determined on prices existing from 1910 to 1915. From these figures the Engineer for peti-

tioner testified that the present fair value of the plant and properties of the petitioner was Nine Hundred Thousand Dollars, ($900,000.00). The Engineer of the Commission reported that the value of the physical property of petitioner was Three Hundred Ninety Seven Thousand Dollars, ($397,000.00) which value was determined upon the basis of prices existing from 1910 to 1915, and included no allowance for going value, water rights, the Bluefield Valley Water Works Company, or any of the intangible elements of value properly chargeable, and included in the valuation of the plant and properties of a public utility. The last named items were valued by the Engineer for petitioner at the sum of One Hundred Twenty Eight Thousand Dollars, ($128,000.00). The Engineer of the Commission testified that the present value of the plant and properties of petitioner, determined in accordance with present day and existing prices, was twice the amount as found by him in his report, plus the intangible elements of value not included by him in his estimate. The Commission found that the value of additions and improvements to the properties of petitioner made since 1915, based on actual cost, less depreciation, was the sum of Sixty Seven Thousand Five Hundred Dollars, ($67,500.00)), not including the value of the Bluefield Valley Water Works Company, which was valued by the Commission at the sum of Twenty Five Thousand Dollars, ($25,000.00). There was no other evidence as to value before the said Commission, and on the 7th day of September 1921, the Commission entered its opinion and order fixing the value of the properties of petitioner at the sum of Four Hundred and Sixty Thousand Dollars, ($460,000.00) and allowed a temporary increase in rates equal to fifteen per cent. surcharge on the existing rates. The last named

and final proceedings herein before the Public Service Commission was designated by the said Commission as Case No. 1138.

Petitioner further shows that a petition was duly filed before the Supreme Court of Appeals of West Virginia praying that said order of the Public Service Commission be suspended, a hearing granted, and that the said orders of the Public Service Commission be reviewed, reversed, and set aside, the petition alleging that said order deprived petitioner of its property without due process of law, and denied to petitioner the equal protection of the law, in violation of the provisions of the Fourteenth Amendment to the Federal Constitution. On the 14th day of December, 1921, the Supreme Court of West Virginia handed down its decision and entered its final order herein refusing to suspend the aforesaid order and affirming the same.

OPINION OF THE COURT BELOW.

Your petitioner respectfully shows that the opinion of the Supreme Court of Appeals of West Virginia in refusing to suspend the order of the Public Service Commission and in affirming the same is erroneous, and that the principals of valuation as established by the said Court are in conflict with the decisions of the Supreme Court of the United States, and in conflict with the decisions of the Federal and State Courts. An analysis of the opinion shows that the Supreme Court of Appeals of West Virginia has established or adopted past cost less depreciation as the principal and only element to be considered in connection with

rate making for service rendered by a public service utility to the public.

(a) The Court below, in its opinion, uses the terms "fair value" and "original cost" synonymously.

(b) The word "investment" as used by the Court in Syllabus 1 of its opinion is unintelligible, and is without meaning, and shows that the Court below is confused as to the terms "investment" and "property."

(c) The conclusion contained in point 2 of the Syllabus, namely, that the original cost considered in connection with the history and growth of the utility, and the value of the service rendered, constitute the principal elements to be considered in connection with rate making for the service rendered the public, is not supported by any opinion found in either the State or Federal Courts. Original cost is not the principal element to be considered, and the Courts have unanimously held that it is only one of the elements to be considered in arriving at value.

(d) The Court below holds that the reproduction new, less depreciation theory of valuation, is an unfair method of valuation, and refuses to consider evidence as to value based upon this method of valuation. The Court below by affirming the order of the Public Service Commission sustained the Commission in limiting its investigation as to value to cost or prices existing from the years 1910 to 1915, and refused to consider the evidence as to present value and prices and refused to allow to petitioner any increase or appreciation for its plant and properties due to increase in prices.

(e) The Court below refused to allow to petitioner any value for its springs and water rights beyond the actual cost of the land on which the springs are located. The evidence in the case establishes the value of these springs, over and above the land on which they are located, at the sum of Fifty Thousand Dollars, ($50,000.00). The Court refusing to allow value to the petitioner upon the grounds that the City of Bluefield was doubtless located with reference to these sources of water supply, and it, not the utility company embracing them, is entitled to the benefits of their relative location.

(f) The Court says, in its opinion, that it does not appear that the springs have any advantages over the next available source of supply in point of economy in supply or operation of its plant; whereas, the evidence establishes the fact that these springs furnish water to petitioner by gravity, and that the cost of supplying the same amount of water from the next available source of supply, for a period of twenty five years, the estimated life of the springs, would cost petitioner the sum of Fifty Thousand Dollars, ($50,000.00). There is no evidence contradicting the statement of the witnesses as to the value of these springs.

(g) A further analysis of the opinion of the Supreme Court shows that neither the Public Service Commission or the Court below properly took into consideration all the elements going to establish the fair value of petitioner's property on which it is entitled to earn a fair return, and that no consideration was given by the Commission or the Court below to the cost of reproduction as determined by prices existing in 1920, the time of the application for an increase in rates. The fact that the Court below and

the Commission mentioned the sums as found by the Engineers to be the present value does not mean that any consideration was given to this evidence, and the opinion of the Commission filed with its order clearly shows that its valuation is based upon the sum of Three Hundred and Sixty Thousand Dollars, ($360,000.00) found by it in its order entered in case No. 368, plus the value of the additions added since 1915, plus the value of the Bluefield Valley Water Works and an allowance for going value.

(h) Chapter 15-0 of the Code of West Virginia, as construed by the Supreme Court of Appeals of West Virginia, denies to petitioner a judicial review of the findings of the Public Service Commission and limits the Supreme Court of Appeals of West Virginia to an investigation as to whether or not the finding of the Commission is void on constitutional or other grounds. The second point of the syllabus of the opinion of the Supreme Court of Appeals of West Virginia in the case of City of Bluefield vs. Bluefield Water Works & Improvement Company, decided October 31, 1917, is as follows:

> "The valuation of the property of a public service corporation and prescribing rates for tolls and charges for services to be rendered, are purely legislative acts not subject to judical review, except insofar, and insofar only, as may be necessary to determine whether such rates are void on constitutional or other grounds."

The Supreme Court of Appeals of West Virginia, in its opinion in the case of Clarksburg Light and Heat Company vs. Public Service Commission, decided October 7, 1919,

holds in the ninth point of the syllabus:

> "The business of rate making being legislative in its character a rate based upon a fact determined to exist by the rate making power, will not be reviewed because of an improper finding based upon disputed facts, but where such fact has been determined by a misapplication of legal principals to the state of facts shown such finding will be corrected by applying correct legal principals to such state of facts."

And in the case of Mill Creek Coal & Coke Company vs. Public Service Commission, decided October 7, 1919, the Supreme Court of Appeals says in its opinion:

> "The findings of fact by the Public Service Commission based upon evidence to support them generally will not be reviewed by this Court."

(i) There is no conflict in the evidence before the Public Service Commission as to the value of the plant and properties of petitioner; all of the witnesses testifying before the said Commission place the value at a sum greater than that determined by the Commission and affirmed by the Supreme Court of Appeals, and the evidence referred to by the Supreme Court of Appeals in its opinion is not evidence as to present value but is as to value existing on the 1st day of January, 1915, plus the depreciated cost of additions made to the plant and properties of petitioner since the said 1st day of January, 1915.

(j) The Supreme Court of Appeals of West Virginia affirms the order of the Public Service Commission requiring petitioner to make large and valuable extensions and additions to its plant and properties, and this part of the

order of the Public Service Commission is affirmed in face of the evidence and record in this case which shows that petitioner has been compelled by the Public Service Commission to operate its plant since 1915 for a return which netted petitioner not over three per cent. upon the value of its plant and properties, and that, at no time since 1915, has the return allowed to your petitioner amounted to six per cent. upon the value established by the Commission in its order entered in case No. 368.

A certified copy of the transcript of the record of the case, including the proceedings in the Court to which the writ of certiorari is asked to be directed, is furnished as an exhibit to this petition.

CONCLUSION.

Your petitioner respectfully shows to the Court that this is a case of great importance to your petitioner, and that for a period of six years petitioner has attempted to secure an adequate return upon the value of its plant and properties, and that at no time within the said six year period has the return allowed to your petitioner equaled six per cent. upon one-half of the actual value of its plant, nor has the return at any time with the six years equaled six per cent. upon the value as established by the Commission in its order in case No. 368, and that it is impossible for it to receive protection from the Supreme Court of Appeals of West Virginia, and that its property is being taken for the public use without just compensation, and that your petitioner is being deprived of its property without due process of law, and is denied the equal protection of the

law, in violation of the rights guaranteed to your petitioner under the Fourteenth Amendment of the Constitution of the United States.

Your petitioner shows the Court in the brief hereto attached, that the opinion of the Supreme Court of Appeals is in conflict with the opinions of this honorable Court, and with opinions in other Federal and State Courts. Petitioner further shows that questions similar to the question herein presented have been passed upon by this honorable Court, and by other Federal Courts, and in every instance the opinions of these Courts have upheld the contention now made by your petitioner. It is respectfully submitted by petitioner that it is necessary that this honorable Court settle the question, not only on account of its importance, but on account of the fact that the decision of the Supreme Court of Appeals of West Virginia conflicts with the decisions of so many other Courts of last resort.

WHEREFORE, your petitioner respectfully prays that a writ of certiorari may be issued out of and under the seal of this Court, directed to the Supreme Court of Appeals of the State of West Virginia to the end that the judgment of the said Supreme Court of Appeals of West Virginia may be reviewed and reversed by this honorable Court.

BLUEFIELD WATER WORKS & IMPROVEMENT CO.

By

A. G. FOX,

JOSEPH M. SANDERS,

SANDERS, CROCKETT, FOX & SANDERS,

Counsel for Petitioner.

STATE OF WEST VIRGINIA:

to-wit:

COUNTY OF MERCER:

WILLIAM McCARTHY being first duly sworn, states that he is Superintendent of the above named petitioner, the Bluefield Water Works & Improvement Company, and as such Superintendent has full knowledge of its business affairs, and particular knowledge of the matters and things set forth in the above petition and of the conduct and proceedings in the above entitled matter; that he has read the foregoing petition and knows the contents thereof, and that the facts therein stated are true, except as stated upon information and belief, and as to such statements he believes the same to be true.

Wm. McMCARTHY.

Subscribed and sworn to before me this 7th day of February, 1922.

(Seal.) LILLIAN E. SNIDOW,
Notary Public.

I hereby certify that I have examined the foregoing petition, and that, in my opinion, the petition is well founded as to matters of fact and as to matters of law, and that the case identified thereby is one and is such that the prayer of the petition should be granted by this honorable Court.

ALFRED G. FOX.

IN THE

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1922.

No.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY, Petitioner,

vs.

PUBLIC SERVICE COMMISSION, Et Al., Respondents.

BRIEF IN SUPPORT OF PETITION FOR WRIT OF CERTIORARI.

Petitioner, in support of its petition for a writ of certiorari, respectfully presents the following brief and states as follows:

A statement of the case presenting the questions involved and the manner in which they were raised is contained in the petition filed herewith. No further statement of the case is deemed necessary. For the convenience of the Court this brief is divided into the propositions relied on by petitioner in support of the petition for the writ of certiorari filed herein, and the authorities in support of

each proposition are quoted and cited following the proposition as laid down. Following each proposition, as stated in the brief, will be found a short note of argument on the preceding proposition.

I.

THE VALUATION OF THE PLANT AND PROPERTY OF A PUBLIC UTILITY FOR RATE MAKING PURPOSES BY A PUBLIC SERVICE COMMISSION AT A SUM WHICH DOES NOT REPRESENT THE PRESENT VALUE OF THE PLANT AND PROPERTIES OF THE UTILITY USED AND USEFUL IN THE SERVICE OF THE PUBLIC, DENIES TO THE UTILITY THE EQUAL PROTECTION OF THE LAW, AND IS IN VIOLATION OF AND CONTRARY TO THE FOURTEENTH AMENDMENT OF THE CONSTITUTION OF THE UNITED STATES.

Knoxville vs. Knoxville Water Company, 212 U. S. 53 Law Edition, 373.

Wilcox vs. Consolidated Gas Company, 53 Law Edition, 382.

Smith vs. Ames, 169 U. S. 42 Law Ed. 819.

San Diego Land & Town Company vs. National City, Infra.

Minnesota Rate Cases, Infra.

This proposition is so elementary and so thoroughly sustained by the authorities that no argument is necessary in support thereof.

II.

A VALUATION FOR RATE MAKING PURPOSES OF THE PROPERTY OF A PUBLIC UTILITY BASED UP-

ON PRICES EXISTING FROM THE YEARS 1910 TO 1915 DEPRIVES THE UTILITY OF ITS PROPERTY WITHOUT DUE PROCESS OF LAW, AND IS IN VIOLATION OF AND CONTRARY TO THE PROVISIONS OF THE FOURTEENTH AMENDMENT OF THE CONSTITUTION OF THE UNITED STATES.

> "Nor do I think it permissible substantially to restrict the inquiry to a period antedating present cost prices."
>
> St. Joseph Railway, Light, Heat & Power Co. vs. Public Service Commission, 268 Fed. 269.
>
> "The principal object of valuation, of course, is to provide a rate base, and the Statute clearly contemplates that the Commission shall ascertain the value as of 'the time of said valuation' and not as of some anterior date: It has been ruled many times that there must be a fair return to a public utility 'upon the reasonable value of the property at the time it is being used for the public.' San Diego Land & Town Company vs. National City, 174 U. S. 739, 757, 19 Sup. Ct. 804, 43 Law Edition 1154; Minnesota Rate Cases, 230 U. S. 352, 434, 33 Sup. Ct. 729, 57 Law Edition 1511, 48 L. R. A. (new series) 1151, Annotated Cases 1916A 18."
>
> "The commission found the fair value of the property as of July 1st, 1914, to be $10,250,000.00. The uncontradicted evidence showed that between that date and December 31, 1916, 'the time of said valuation' there had been a sharp rise in values" •••••••••••• "Appellants contend that the Commission, as a matter of law in reaching a conclusion as to the fair value of their property on December 31, 1916, should have taken into consideration the increased value of that property, as shown by

the evidence between the earlier and later dates. This the Commission declined to do, but taking for a basis the fair value of the property as of July 1st, 1914, the Commission added the net additional expenditures on the property subsequent to that date and entirely ignored the evidence as to the increase in the value of the property forming the basis of the valuation of July 1st, 1914." *********
"The trial Court was of the view that the rule adopted by the Commission was correct. We are unable to concur in that view."

"We are of the opinion, therefore, that the present cost of reproduction is one of the necessary elements for consideration along with other relevant facts in fixing the fair and reasonable value of the property."

Potomac Electric Power Company et al vs. Public Utilities Commission of District of Columbia, 276 F. 327 (Court of Appeals of District of Columbia, Nov. 7, 1921.)

"There must be a fair return upon the reasonable value of the property at the time it is being used for the public."

Wilcox vs. Consolidated Gas Company, 212 U. S. 53 Law Edition, 395.

"We concur with the Court below in holding that the value of the property is to be determined as of the time when the inquiry is made regarding the rates. If the property which legally enters into the consideration of the question of rates has increased in value since it was acquired, the Company is entitled to the benefit of such increase."

Wilcox vs. Consolidated Gas Co., supra.

Judge Swayze, of the Supreme Court of New Jersey, in discussing the question of the failure of a regulating board to allow for prices at the time to which the rates apply, says:

> "I think it is entirely clear that the failure to allow for prices at the time to which the rates apply, July 1st, 1919, was an error. It is not denied that prices were very much higher in 1919, and are very much higher now, than the average for the years 1911 to 1916. So notorious is this that the Supreme Court of the United States has referred to it in an opinion as a matter of common knowledge. Lincoln Gas Company vs. Lincoln, 250 U. S. 256, page 268. In that case, on its own responsibility, the Court suggested that in its opinion the decree ought to be modified to permit the complainant to make another application to the Courts for relief. It would be manifestly unjust to apply to a gas company a standard of value different from that applied to others."

Elizabethtown Gas & Light Company vs. Board of Public Utility Commissioners, (New Jersey) 111 Atl. 729.

> "In the very recent case of United States ex rel Kansas City Southern Railway Company vs. Interstate Commerce Commission, 252 U. S. 178, decided by the Supreme Court, March 6th, 1920, it appears that Congress has given legislative recognition to this same principal and the Court ordered the Commission to make its valuation in compliance with the Act of Congress. While the decision in that case was predicated upon the express provisions of the Act, nevertheless, we find in it a recognition, both by Congress and by that Court of the neces-

sity of adopting the standard of rate making bodies to conditions existing at the time the power is to be exercised."

St. Joseph etc. Ry. Co. vs. Public Service Commission, Supra.

"But it may be pointed out that it appears upon the face of the report that great, if not undue, emphasis was laid upon the original cost of the property at a period greatly antedating that with which this investigation must deal; nor can we say that the present period of high prices is so temporary or abnormal that it may practically be disregarded in arriving at the value of complainant's properties. No one can say what degree of depression may ultimately come, but it is reasonably certain that the cost of the properties now under consideration will never again approximate figures prevailing in the years before the world war."

Joplin & Pittsburg Railway Company vs. Public Service Commission, 267 Federal Reporter, 587.

The action of the Public Service Commission in restricting its inquiry as to value to a period antedating present prices, and in basing the value fixed by it on the plant and properties of petitioner upon a basis determined upon prices existing five years prior to the date of the application for an increase in rates, is one of the main points relied on by petitioner for a reversal of the Supreme Court of Appeals of West Virginia in affirming the order of the Public Service Commission fixing the value of the plant and properties of petitioner. The case of the Potomac Electric Power Company vs. Public Utilities Commission, above cited, presents exactly the same question as is pre-

sented by the record in this case. The reasoning of the Court as stated by Judge Robb in the opinion is sound and is supported by the authorities quoted by him. Prices existing from the period 1910 to 1915 may throw light upon the present value, but where value is determined solely by the basis of prices existing as of some anterior date a utility is deprived of the value of its property, due to an increase in prices, and due to appreciation of its property, and it is a clear confiscation of the plant and property of petitioner to base rates upon a value thus determined

III.

A PUBLIC UTILITY IS ENTITLED TO A RETURN UPON THE VALUE OF ITS PLANT AND PROPERTIES AT THE TIME AN APPLICATION IS MADE FOR AN INCREASE IN RATES, AND A VALUATION MADE BY A PUBLIC SERVICE COMMISSION WHICH ASCERTAINS THE VALUE OF THE PLANT AND PROPERTIES OF THE PETITIONER AS OF JANUARY 1st, 1915, AND REFUSES TO ALLOW THE UTILITY A RETURN UPON THE INCREASED VALUE OF ITS PLANT, DUE TO A SHOWN AND DEMONSTRATED INCREASE IN COST AND PRICES SINCE THE YEAR 1915, IS AN UNFAIR VALUATION AND TAKES THE PROPERTY OF THE UTILITY FOR THE PUBLIC USE WITHOUT DUE PROCESS OF LAW, AND DEPRIVES THE UTILITY OF THE EQUAL PROTECTION OF THE LAW.

The following cases are cited in support of this proposition.

Wilcox vs. Consolidated Gas Co., supra.

St. Joseph etc. Company vs. Public Service Com-

mission, supra.

Joplin, etc. Company vs. Public Service Commission, supra.

Elizabethtown etc. Company vs. Board of Public Utility Commissioners, supra.

Potomac Electric Power Company vs. Public Utilities Commissioners, supra.

This proposition is merely a restatement of the propositions contained in paragraph one and two hereof. We call the Court's attention to the fact that in the evidence before the Public Service Commission of West Virginia there is no denial that the present value, as determined by prices existing in 1920, is greatly in excess of the value as placed by the Commission. The Engineer of the Public Service Commission based his valuation on prices existing from 1910 to 1915, because instructed so to do by the Commission. He states in his evidence that had he made his estimate of value on a basis of 1920 prices the value of the physical property found by him would have been twice the amount shown in his report; and it is to be remembered, also, that the valuation of the Engineer of the Public Service Commission contained no allowance for the intangible elements of value which are avowedly left to the determination of the Commission, so it can be safely said that all the estimates in regard to present value found in the record place the value at a sum greatly in excess of that fixed by the Commission in its order.

IV.

A PUBLIC UTILITY IS ENTITLED TO A RETURN UPON THE FAIR VALUE OF ALL OF THE COMPON-

ENT ELEMENTS OF ITS PLANT AND PROPERTY AS OF THE TIME AN APPLICATION IS MADE FOR AN INCREASE IN RATES AND AN ORDER OF A PUBLIC SERVICE COMMISSION REFUSING TO ALLOW A PUBLIC UTILITY A RETURN UPON ITS WATER RIGHTS AND SPRINGS OVER AND ABOVE THE VALUE OF THE LAND ON WHICH THE SAID SPRINGS ARE LOCATED IS AN UNFAIR VALUATION, ESPECIALLY IN THE LIGHT OF UNCONTRADICTED EVIDENCE THAT THE VALUE OF THE SPRINGS AND WATER RIGHTS IS FIFTY THOUSAND DOLLARS, ($50,000.00) OVER AND ABOVE THE VALUE OF THE LAND ON WHICH THE SAID SPRINGS ARE LOCATED.

The question as to the value of water rights and springs of a public utility furnishing water is fairly before the Court in the instant case, and the exigences of the case require that this question be passed upon. The question has been mooted but not decided by this Court in Denver vs. Denver Union Water Company, 246 U. S. 63 Law Edition, 649. The valuation of these springs is made by one of the foremost hydraulic and sanitary Engineers in the United States, John W. Alvord, and his reasons for placing the value at the sum of Fifty Thousand Dollars, ($50,000.00) are clearly and conclusively shown in his evidence. Due to the peculiar location of the City of Bluefield, and the large expense of furnishing an equal supply of water from the next available source of supply, the fact that these springs, valued by the Company at the sum of Fifty Thousand Dollars, ($50,000.00), deliver water into the City of Bluefield by gravity gives them an element of

value rarely found in property of this character, and one dissimilar to any question raised in regard to the valuation of other springs and water rights.

V.

AN EXAMINATION OF THE RECORD AND THE EVIDENCE IN THIS CASE SHOWS THAT A FAIR MINDED BOARD COULD NOT HAVE ARRIVED AT THE CONCLUSION REACHED BY THE PUBLIC SERVICE COMMISSION OF WEST VIRGINIA WHEN IT CONCLUDED THAT THE FAIR VALUE OF THE PLANT AND PROPERTY OF PETITIONER WAS ONLY FOUR HUNDRED AND SIXTY THOUSAND DOLLARS, ($460,000.00).

The sum of Four Hundred and Sixty Thousand Dollars, ($460,000.00) set by the Commission as the value of the plant and properties of petitioner for rate making purposes is not supported by any evidence in the record, and consequently is an arbitrary valuation fixed by the Commission, and is not supported by either the law or the facts. In fact, the record clearly shows that the sum of Four Hundred and Sixty Thousand Dollars, ($460,000.00) fixed by the Commission is nothing more or less than the sum of Three Hundred and Sixty Thousand Dollars, ($360,000.00) fixed by them as the value of the plant in case No. 368, which value was determined as of January 1st, 1915, plus the value of improvements, additions and betterments made since the order in that case was entered. There was no evidence before the Commission in case No. 368 upon which a finding of Three Hundred and Sixty Thousand Dollars, $360,000.00) could have been based There were only two witnesses testifying before the Commission as to value, and

the lowest estimate placed upon the value of the plant as of January 1st, 1915, was Three Hundred and Ninety Two Thousand Dollars, ($392,000.00), which valuation was made by W. E. Miller, an Engineer employed by the City of Bluefield. The Commission found that since the said 1st day of January, 1915, the cost of the improvements and betterments made by petitioner, after deducting depreciation, was approximately Sixty Seven Thousand Dollars, ($67,000.00). The Commission, in the final order entered in this case, also included in the value of the plant the value of the Bluefield Valley Water Works Company, which was valued by the Commission at the sum of Twenty Five Thousand Dollars, ($25,000.00). The value of the additions and betterments, and the value of the Bluefield Valley Water Works Company, when added to the original valuation as made by the Commission, approximate the sum of Four Hundred and Sixty Thousand Dollars, ($460,000.00), the final valuation made by the Commission. This valuation cannot be sustained by any evidence found in the record as to present value, and could only be arrived at by the consideration of the evidence as to value of the plant and property of petitioner as of the 1st day of January, 1915. No fair minded Commission would disregard the opinions of the various Courts holding that value must be determined as of the date when an application for an increase in rates is made, and no fair minded Commission could close its eyes to the great increase in value of the public utility due to increase in prices and costs. There has been no unusual depreciation in the plant and properties of petitioner, and the Engineer of the Commission found that the total plant and property of petitioner was in an eighty-one per cent. condition. No other con-

clusion can be arrived at except that the Commission and the Supreme Court of Appeals of West Virginia laid undue emphasis upon the investment or upon past cost, and that both the Commission and the Supreme Court of Appeals took past cost as a controlling element in determining present value.

VI.

A RETURN OF ONLY EIGHT PER CENT. UPON THE VALUE OF A PUBLIC UTILITY ENGAGED IN SUPPLYING WATER TO A MUNICIPALITY, AND THE CITIZENS THEREOF, IS NOT AN ADEQUATE RETURN TO THE UTILITY FOR THE SERVICE RENDERED, AND IS NOT SUCH A RETURN AS WOULD INDUCE A PRUDENT MAN TO INVEST IN THE BONDS OF THE UTILITY, FOR THE REASON THAT TWO PER CENT. OF THE SAID RETURN MUST BE SET ASIDE TO COVER ANNUAL DEPRECIATION.

> "It is a matter of common knowledge that owing principally to the world war the cost of labor and supplies of every kind have greatly advanced since the Ordinance was adopted, and largely since this cause was heard in the Court below, and it is equally well known that annual returns upon capital and enterprise the world over have materially increased, so that what would have been a proper rate of return for capital invested in gas plants and similar public utilities a few years ago furnishes no safe criterion for the present or for the future."
>
> Lincoln Gas & Electric Light Company vs. City of Lincoln, 250 U. S. 63 Law Edition, 968.

A return of six per cent. to a public utility which is subject to the control and regulation of a State Public Service Commission is not an adequate return to the utility not only for the reason that the rate of return on invested capital has materially increased, and that such a return can be obtained on the safest and most conservative of investments, but for the further reason that a prudent man expects to receive at least six per cent. upon any investment made, and an investment in either stock or property is made with the anticipation that it will net a return of at least six per cent. and that the investor is offered a chance to secure a larger return upon his investment, due to a prospective increase in the value of stocks or bonds or property in which he invests his money. Six per cent. is the maximum that can be obtained from investment in the bonds of a regulated public utility, for so soon as the return made by the utility exceeds six per cent. the rates are reduced by the rate making body. It is true that the rate of interest allowed in the State of West Virginia is six per cent. but higher rates of interest are allowed by adjacent States, and no prudent man would invest his money in the bonds of a public utility, especially in light of the history of petitioner's plant which shows that the rate making body for over a period of five years has refused to allow petitioner a return of six per cent. upon the value fixed by the Commission.

VII.

A RATE MAKING BODY CANNOT RELIEVE ITSELF OF THE DUTY OF ALLOWING TO A PUBLIC UTILITY THE PRESENT VALUE OF ITS PLANT AND PROPERTIES BY THE STATEMENT THAT THE PRICES EX-

ISTING IN 1920 WERE INFLATED OR TEMPORARY. UPON ANY MARKED DECREASE IN THE PRICES EXISTING AS OF THE DATE OF THE APPLICATION FOR AN INCREASE IN RATES, THE COMMISSION HAS AUTHORITY, UNDER THE LAW, TO REDUCE THE RATES ALLOWED TO THE UTILITY.

> "In our view, it was the duty of the Commission to have considered and given due weight to the evidence as to the then value of the property. As conditions changed and values were substantially affected, it would have been the further duty of the Commission to exercise its discretion and revalue the property. The conditions existing were world wide and, while their duration and future effect were problematical, there was no immediate prospect of a return to normal conditions."
>
> Potomac Electric Railway Company vs. Public Utilities Commission, 276 Fed. 330.

VIII.

THE OPINION AND ORDER OF THE SUPREME COURT OF APPEALS OF WEST VIRGINIA REFUSING TO SUSPEND THE ORDER OF THE PUBLIC SERVICE COMMISSION OF WEST VIRGINIA AND IN AFFIRMING THE SAID ORDER, DEPRIVES PETITIONER OF ITS PROPERTY WITHOUT DUE PROCESS OF LAW, AND DENIES PETITIONER THE EQUAL PROTECTION OF THE LAW. THE SAID OPINION OF THE SUPREME COURT OF APPEALS OF WEST VIRGINIA IS IN CONFLICT WITH THE OPINIONS OF THIS HONORABLE COURT AND OTHER COURTS OF LAST RESORT, AND

AN EXAMINATION OF THE OPINION OF THE SAID SUPREME COURT OF APPEALS OF WEST VIRGINIA SHOWS THAT THE COURT BY THE TERM "FAIR VALUE OF ITS INVESTMENT" MEANS "PAST COST LESS DEPRECIATION." AN EXAMINATION OF THE OPINION ALSO DISCLOSES THAT THE COURT REFUSES TO ALLOW TO PETITIONER ANY VALUE FOR APPRECIATION OF ITS PLANT AND PROPERTIES AND REFUSES TO CONSIDER INCREASE IN VALUE DUE TO INCREASE IN PRICES.

IX.

SECTION 16, CHAPTER 15-0 OF THE CODE OF WEST VIRGINIA, AS CONSTRUED BY THE SUPREME COURT OF APPEALS OF WEST VIRGINIA, WITHHOLDS FROM THE COURT POWER TO DETERMINE THE QUESTION OF CONFISCATION ACCORDING TO ITS OWN INDEPENDENT JUDGMENT WHEN THE ACT OF THE STATE PUBLIC SERVICE COMMISSION IN FIXING THE VALUE OF A WATER COMPANY'S PROPERTY FOR RATE MAKING PURPOSES COMES TO BE CONSIDERED ON APPEAL AND MUST BE DEEMED TO DENY DUE PROCESS OF LAW, THERE BEING NO OTHER REMEDY PROVIDED BY STATUTE WHICH AFFORDS A JUDICIAL REVIEW OF THE FINDINGS OF THE PUBLIC SERVICE COMMISSION.

Various quotations from the opinions of the Supreme Court of Appeals of West Virginia construing Section 16 of Chapter 15-0 of the Code are made in the accompanying

petition. In the recent case of City of Charleston vs. Public Service Commission, decided July 8, 1920, reported in 86 West Virginia Reports, page 536, point one of the syllabus is as follows:

> "Findings of fact by the Public Service Commission, based upon evidence to support them, generally will not be reviewed by this Court."

Section 16, Chapter 15-0 of Barnes' Code is as follows:

> "Any party feeling aggrieved by the entry of a final order by the Commission, affecting him or it, may present his or its petition in writing to the supreme court of appeals, or to a judge thereof in vacation, within thirty days after the entry of such order, praying for the suspension of such final order. The applicant shall deliver a copy of such petition to the secretary of the commission before presenting the same to the court, or the judge. The court or judge shall fix a time for the hearing on the application, but such hearing shall not be held sooner than five days, unless by agreement of the parties, after its presentation, and notice of the time and place of such hearing shall be forthwith delivered to the secretary of the commission, so that the commission may be represented at such hearing by one or more of its members or by counsel. If the court or the judge after such hearing be of the opinion that a suspending order should issue the court or the judge may require bond, upon such conditions and in such penalty, and impose such terms and conditions upon the petitioner as are just and reasonable. The hearing of the matter shall take precedence over all other matters before the court except the correction of assessments. For such hearing the commission shall file with the

clerk of said court all papers, documents, evidence and records or certified copies thereof, as were before the commission at the hearing or investigation resulting in the entry of the order from which the petitioner appeals. The commission shall file with the court before the day fixed for the final hearing a written statement of its reasons for the entry of such order, and after arguments by counsel the court shall decide the matter in controversy as may seem to be just and right."

The construction placed upon this section of the Statute by the Supreme Court of Appeals of West Virginia is the same construction as placed upon the Pennsylvania Statute by the Supreme Court of the State of Pennsylvania, and this point is controlled by the opinion of this honorable Court rendered in Ohio Valley Water Company vs. Ben Avon Borough, 64 Law Edition, 908.

In conclusion it is respectfully submitted that the opinion and order of the Public Service Commission entered herein is based upon an erroneous application of the law to a misapprehension of the facts established by the evidence, and that the opinion of the Supreme Court of Appeals of West Virginia affirming the said order of the Commission shows that the said Supreme Court of Appeals is under a misapprehension as to the rules of valuation established by this honorable Court, and other Courts of last resort, and that by reason thereof a great injustice has been done to petitioner, and that its property is being taken for the public use without just compensation, and that it is deprived of due process of law, and denied the equal protec-

tion of the law, in violation of the provisions of the Federal Constitution. By reason whereof and in light of which it is respectfully submitted that the action of the Public Service Commission of West Virginia and the said Supreme Court of Appeals should be reviewed by this honorable Court.

Respectfully submitted.

BLUEFIELD WATER WORKS & IMPROVEMENT CO.
By
A. G. FOX,
JOSEPH M. SANDERS,
SANDERS, CROCKETT, FOX & SANDERS,
Attorneys for Petitioner.

Supreme Court of the United States

OCTOBER TERM, 1922.

No. 256

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY, Plaintiff in Error.

vs.

PUBLIC SERVICE COMMISSION OF THE STATE OF WEST VIRGINIA AND THE CITY OF BLUEFIELD, Defendants in Error.

MOTION TO DISMISS

And now comes the defendant in error, the City of Bluefield, by Russell S. Ritz, its attorney, and moves the Court to dismiss the writ of error herein for the following reasons:

The judgment of the Supreme Court of West Virginia, affirming the order of the Public Service Commission of that State herein fixing for rate making purposes the value of the plaintiff's in error property, does not draw in question the validity of a treaty or statute of, or an authority exercised under, the United States; nor does such judgment complained of herein draw in question the validity of a statute of, or an authority exercised under, the

State, that is claimed to be repugnant to the constitution, treaties, or laws of the United States, as set forth in Section 237 of the judicial code, providing for review by this Court of the judgment of a state court by writ of error; but the judgment complained of herein is the fixing of value for rate making purposes of the property of the plaintiff in error, reached from a controverted state of facts, not by an illegal tribunal acting under an unconstitutional law but by a tribunal that is conceded to have legal authority to fix such value, that acted under state laws that are conceded not to be repugnant to the Federal laws or Constitution.

The conclusion reached from a controverted state of facts by a lawful tribunal, acting with lawful authority, resulting in the judgment complained of, furnishes the basis for the complaint set up herein, which it is submitted cannot be reviewed by a writ of error.

RUSSELL S. RITZ,
Counsel for City of Bluefield.

NOTICE OF SUBMISSION OF MOTION

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY, Plaintiff in Error.

vs.

PUBLIC SERVICE COMMISSION OF THE STATE OF WEST VIRGINIA AND THE CITY OF BLUEFIELD, Defendants in Error.

To Messrs. Joseph M. Sanders and A. G. Fox, of Sanders, Crockett & Fox, Counsel for Plaintiff in Error:

Please take notice that upon a calling of this case on the argument docket, a motion of which the foregoing is a copy will be submitted to the Supreme Court of the United States for the decision of the said Court thereon.

Annexed hereto is a copy of the brief of argument to be submitted with the said motion in support thereof.

RUSSELL S. RITZ,
Counsel for Defendant in Error,
City of Bluefield.

Legal service of the above notice of motion to dismiss the above cause is accepted this the 27th day of December, 1922.

A. G. Fox,
Joseph M. Sanders,
of Sanders, Crockett & Fox
Counsel for Plaintiff in Error.

Supreme Court of the United States

OCTOBER TERM, 1922.

No. 256

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY, Plaintiff in Error.

vs.

PUBLIC SERVICE COMMISSION OF THE STATE OF WEST VIRGINIA AND THE CITY OF BLUEFIELD, Defendants in Error.

Brief In Support of Motion To Dismiss The Writ of Error Herein.

The plaintiff in error is a public utility engaged in furnishing and providing water to the citizens and inhabitants of the City of Bluefield for domestic and commercial uses and purposes, and as such is subject to the provisions of Chapter 15-0, Barnes' 1918 West Virginia Code, known as the West Virginia Public Service Commission Law, under which statute a tribunal is provided and given full authority to fix and establish rates to be charged by public service corporations in the conduct of their business with the public, and general authority to regulate

and control the kind and character of service to be rendered by such public service utilities.

The plaintiff in error, recognizing the authority in this Commission to fix and establish rates, made application to it for certain increases in its water rates; and in order to determine this question the Commission was asked to fix a value upon the property of the plaintiff; used and useful in the public service, upon which value the plaintiff in error asked to be given a fair return. The rate of return upon the investment was fixed at eight per cent (8%), so that after fixing the rate of return the question remaining then to be determined was the valuation to be fixed upon the plaintiff's in error property, used and useful in the public service. Valuations and appraisements were furnished to the Commission by engineers for the Water Company and the City of Bluefield, and by the Commission's own engineer, and an audit of the Water Company's books by the Commission's statistician, showing the actual investment, together with various and sundry other evidence of values, from which the Public Service Commission on September 7, 1921, found the fair and reasonable value of plaintiff's in error property, then in use and useful in the public service, to be $460,000.00, upon which it was given a rate that would return to it eight per cent (8%) annually on this valuation.

(See opinion of Wiles, Commissioner, and order of the Commission, Vol. II, p. r. 1358-1372.)

The Water Company claimed the valuation fixed by the Public Service Commission was too low and that it amounted to a confiscation of its pro-

perty, in violation of Clause One of the Fourteenth Amendment to the Federal Constitution, and prosecuted an appeal to the Supreme Court of West Virginia, where the action of the Commission in fixing the Water Company's valuation was fully considered approved and affirmed by the Court on December 14, 1921.

(See order of the Court and opinion of Miller, J., of the Court, Vol. II, p. r. 1374-1380.)

And to review the judgment of the Supreme Court herein confirming the order of the Public Service Commission in fixing the value of plaintiff's in error property for rate making purposes at the sum of $460,000.00, this writ of error is prosecuted.

WRIT OF ERROR WILL NOT LIE.

A writ of error from the Federal Supreme Court will not lie to review the judgment of a State Court of last resort, where no such federal question is presented as brings it within the interpretation of Sec. 237 of the judicial code, which sets out the cases in which a review of a state court's judgment may be entertained on writ of error. This section provides that a review of the highest court of a state may be had in two general classes of cases. First, where the judgment or decree complained of draws in question "the validity of a treaty or statute of, or an authority exercised under, the United States, and the decision is against their validity." Plainly there is not presented such a case as that here. No contention is made that the Public Service Commission of West Virginia in fixing plaintiff's in error proper-

ty valuation for rate making, or the Supreme Court of West Virginia in confirming that valuation so fixed, declared invalid "any treaty or statute of, or an authority exercised under, the United States." Second, in that class of cases where the decision of the highest court of the state draws in question "the validity of a statute of, or an authority exercised under, any state, on the ground of their being repugnant to the Constitution, treaties, or laws of the United States, and the decision is in favor of their validity." It is likewise plainly to be seen that the judgment of the Supreme Court of West Virginia herein does not declare valid any statute of the State or any authority exercised under the State, which is repugnant to the Constitution, treaties, or laws of the United States. The authority under which the Public Service Commission of West Virginia acted in fixing plaintiff's in error valuation of its property is legal and valid and recognized to be so by the plaintiff in error when it invoked the jurisdiction of the Commission for the purpose of determining its property valuation for rate making purposes. The Public Service Commission concededly acted with lawful authority in doing what it did. It did not undertake to declare invalid any part of the Federal law or Constitution, nor did it validate a state law or authority under the state which would nullify and invalidate the Federal law or Constitution.

The most that can be claimed is that the Commission, acting under lawful authority in reaching the conclusion from a disputed state of facts, found and fixed the value of plaintiff's in error property

for rate making purposes at an amount less than some other tribunal may have fixed and determined from a like state of facts. A judgment based upon such a state of facts does not raise such a federal question as gives a right of review from the Federal Supreme Court to the highest court of the State by a writ of error. The Public Service Commission acted under valid State authority, which authority in itself is not repugnant to any Federal law. The Supreme Court of West Virginia in confirming the action of the Public Service Commission likewise acted under valid State authority, which authority is not repugnant to any Federal law. The authority or law under which these respective tribunals exercised jurisdiction in this cause, not being repugnant to any Federal law, what conclusions they may have reached from a given state of facts which furnishes the basis for the judgment complained of herein, does not present a question subject to be reviewed by writ of error. Such questions can be reviewed only on petition for a writ of certiorari.

In the recent case of Zucht vs. King, —— U. S. ——, 67 L. Ed. 28, (decided November 13, 1922), Mr. Justice Brandeis, delivering the opinion of the Court, holds as follows:

> "The bill contains also averments to the effect that, in administering the ordinance, the officials have discriminated against the plaintiff in such a way as to deny to her equal protection of the laws. These averments do present a substantial constitutional question. Neal v. Delaware, 103 U. S. 370, 26 L. ed. 567. But the question is not of that character which entitled a litigant to a review by this court on writ of error. The question does not go to

the validity of the ordinance; nor does it go to the validity of the authority of the officials. Compare United States ex rel. Taylor v. Taft, 203 U. S. 461, 51 L. ed. 269, 27 Sup. Ct. Rep. 148; United States ex rel. Champion Lumber Co. v. Fisher, 227 U. S. 445, 57 L. ed. 591, 33 Sup. Ct. Rep. 329; Yazoo & M. Valley R. Co. v. Clarksdale, 257 U. S. 10, 16, 66 L. ed. ——, 42 Sup. Ct. Rep. 27. This charge is of an unconstitutional exercise of authority under an ordinance which is valid. Compare Stadelman v. Miner, 246 U. S. 544, 62 L. ed. 875, 38 Sup. Ct. Rep. 359. Unless a case is otherwise properly here on writ of error, questions of that character can be reviewed by this court only on petition for a writ of certiorari."

Again in the case of Stadelman v. Miner, 246 U. S. 544, 62 L. ed. 875, this Court, in the opinion delivered by Mr. Justice Brandeis on this question, observes as follows:

"Upon this contention the case was brought here under Sec. 237 of the Judicial Code (36 Stat. at L. 1156, Comp. Stat. 1916, Sec. 1214). But under that section, as amended by Act of September 6 1916, chap. 448, 39 Stat. at L. 726, Comp. Stat. 1916, Sec. 1207, a final decree of a state court of last resort can be reviewed here on writ of error only in a suit 'where is drawn in question the validity of a treaty or statute of, or an authority exercised under the United States, and the decision is against their validity; or where is drawn in question the validity of a statute of, or an authority exercised under any state, on the ground of their being repugnant to the Constitution, treaties, or laws of the United States, and the decision is in favor of their validity.' The judgment here involved was entered after the Act of September, 1916, took effect. There was not drawn in question the validity of any treaty or sta-

tute. And challenging the power of the court to proceed to a decision did not draw in question the validity of any authority exercised under the state. Philadelphia & R. Coal & I. Co. v. Gilbert, 245 U. S. 162, ante, 221, 38 Sup. Ct. Rep. 58; Ireland v. Woods, 246 U. S. 323, ante, 745, 38 Sup. Ct. Rep. 319, March 18, 1918. The writ of error is therefore dismissed."

Again in the case of Philadelphia & Reading Coal & Iron Company v. Gilbert, 245 U. S. 162, 62 L. ed. 221, this Court, in the opinion delivered by Mr. Justice Van Devanter, reviews this question as follows:

"A motion to dismiss the writ is made upon the ground that the judgment, if open to review here, cannot be reviewed upon a writ of error, but only upon a writ of certiorari.

"Under Sec. 237 of the Judical Code, as amended September 6, 1916 (chap. 448, 39 Stat. at L. 726, Comp. Stat. 1916, Sec. 1214), a final judgment or decree of a state court of last resort in a suit 'where is drawn in question the validity of a treaty or statute of, or an authority exercised under the Unted States, and the decision is against their validity; or where is drawn in question the validity of a statute of, or an authority exercised under any state, on the ground of their being repugnant to the Constitution, treaties, or laws of the United States, and the decision is in favor of their validity,' may be reviewed in this court upon writ of error; but, if the suit be one 'where is drawn in question the validity of a treaty or statute of, or an authority exercised under the United States, and the decision is in favor of their validity; or where is drawn in question the validity of a statute of, or an authority exercised under any state, on the grounds of their being re-

pugnant to the Constitution, treaties, or laws of the United States, and the decision is against their validity; or where any title, right, privileg., or immunity is claimed under the Constitution, or any treaty or statute of, or commission held or authority exercised under the United States, and the decision is either in favor of or against the title, right, privilege, or immunity especially set up or claimed, by either party, under such Constitution, treaty, statute, commission, or authority,' the judgment or decree can be reviewed in this court only upon a writ of certiorari. The difference between the two modes of securing a review, as contemplated by the statute, lies in the fact that a writ of error is granted as of right, while a writ of certiorari is granted or refused, in the exercise of a sound discretion.

"By a timely motion the defendant sought to have the service of the summons set aside upon the ground—'that said service is void, in that the defendant's consent to be sued in the state of New York by service upon its aforesaid designated agent can only be implied with respect to causes of action arising in connection with business the defendant transacts in the state of New York; the plaintiff's cause of action herein did not arise in connection with the business defendant transacts in the state of New York, but is brought to recover damages for personal injuries alleged to have been sustained in the state of Pennsylvania. An attempt to compel the defendant to respond to this suit in the supreme court of the state of New York, sitting in Westchester county, is an invasion of the defendant's rights under the Constitution of the United States, particularly Sec. 1 of the 14th Amendment of the said Constitution.'

"The motion was overruled and the defendant, having first excepted to the ruling, answered to the merits.

"All that was drawn in question by the motion was the validity of the service and the power of the court, consistently with the 1st section of the 14th Amendment,—probably meaning the due process of law clause,—to proceed upon that service to a hearing and determination of the case. It did not question the validity of any treaty or statute of, or authority exercised under, the United States. Neither did it challenge the validity of a statute of, or an authority exercised under, any state, on the ground of its being repugnant to the Constitution, treaties, or laws of the United States. Challenging the power of the court to proceed to a decision of the merits did not draw in question an authority exercised under the state, for, as this court has said, the power to hear and determine cases is not the kind of authority to which the statute refers. Bethell v. Demaret, 10 Wall. 537, 540, 19 L. ed. 1007, 1008; French v. Taylor, 199 U. S. 274, 277, 50 L. ed. 189, 191, 26 Sup. Ct. Rep. 76.

"It follows that the judgment cannot be reviewed upon writ of error. If a review was desired it should have been sought under that clause of the certiorari provision which reads, 'or where any title, right, privilege, or immunity is claimed under the Constitution,' etc."

This question came before the Court again in the case of Ireland v. Woods, 246 U. S. 323, 62 L. ed. 745, and in the opinion delivered by Mr. Justice McKenna, it is held as follows:

"A motion to dismiss is made, the grounds of it being: (1) The judgment of the court of appeals is reviewable, if at all, only by certiorari. (2) It is not reviewable at all because, under the limitation of the jurisdiction of the court of appeals, it had no power to review or decide the question whether there was any evidence to show that Ireland was a

fugitive from justice, and that the court of appeals must be assumed not to have passed upon or to have decided the question whether Ireland was a fugitive from justice. Whether the assumption is justified or not we do not consider, on account of the view we entertain of the first ground of the motion, to which we immediately pass. To sustain it counsel adduces Sec. 237 of the Judicial Code (36 Stat. at L. 1156, chap. 231), as amended September 6, 1916 (chap. 448, 39 Stat. at L. 726, Comp. Stat. 1916, Sec. 1214). It provides in what cases and how there can be a review of a judgment or decree of a state court by this court. It reads as follows: 'A final judgment or decree in any suit in the highest court of a state in which a decision in the suit could be had, where is drawn in question the validity of a treaty or statute of, or an authority exercised under, the United States, and the decision is against their validity; or where is drawn in question the validity of a statute of, or an authority exercised under any state,on the ground of their being repugnant to the Constitution, treaties, or laws of the United States, and the decision is in favor of their validity, may be re-examined and reversed or affirmed in the Supreme Court upon a writ of error.'

"When, however, the conditions are reverse, that is, when state court judgments affirm the national powers against a contention of their invalidity, or sustain the validity of the state authority against an attack based on Federal grounds, there can be review only by certiorari. And the same manner of review is prescribed where any title, right, privilege, or immunity is claimed under the Constitution or

any treaty or statute of, or commission held or authority exercised under, the United States, and the decision is either in favor of or against the claim set up.

"The difference between the remedies is that one (writ of error) is allowed as of right where, upon examination, it appears that the case is of the class designated in the statute, and that the Federal question presented is real and substantial and an open one in this court, while the other (certiorari) is granted or refused in the exercise of the court's discretion.

* * * * * * * * * * * * *

"We are unable to assent to the latter part of the insistence. Questions of law which may be raised upon the indictment, the deductions from the facts which may be charged against the action of the governor, do not impugn it or the validity of the statute which enjoined it. And surely the decisions of the courts of New York, one trial and two appellate, affirming the legality of his action, are not decisions against the validity of the authority he exercised.

"There is a difference between a question of power to pass a law and its construction, and a difference between the endowing of an officer with authority and his erroneous exercise of that authority. As was said by Chief Justice Fuller, speaking for the court in United States v. Lynch, 137 U. S. 280, 285, 34 L. ed. 700, 702, 11 Sup. Ct. Rep. 114: 'The validity of a statute is not drawn in question every time rights claimed under such statute are contro-

verted, nor is the validity of an authority, every time an act done by such authority is disputed.'

"We think, therefore, that the writ of error must be and it is dismissed."

It is, therefore, submitted that the motion to dismiss the writ of error herein should be sustained.

Respectfully,

RUSSELL S. RITZ,

Counsel for Defendant in Error,
City of Bluefield.

FILED
JAN 18 1923
WM. R. STAYSBURY
CLERK

Supreme Court of the United States

OCTOBER TERM, 1922.

No. 286

Bluefield Water Works & Improvement Company, Plaintiff in Error,
vs.
Public Service Commission of the State of West Virginia and City of Bluefield, a Municipal Corporation, Defendants in Error.

BRIEF OF RUSSELL S. FITZ,
Attorney For Defendants in Error, City of Bluefield.

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Supreme Court of the United States

OCTOBER TERM, 1922.

No. 256

Bluefield Water Works & Improvement Company, Plaintiff in Error.

vs.

Public Service Commission of the State of West Virginia and City of Bluefield, a Municipal Corporation, Defendants in Error.

BRIEF OF RUSSELL S. RITZ,
Attorney For Defendant in Error, City of Bluefield.

QUESTIONS INVOLVED.

The judgment of the Supreme Court of Appeals of West Virginia, confirming the findings of the Public Service Commission of the State of West Virginia in fixing a valuation for rate-making purposes of $460,000.00 on the plant and property of the plaintiff in error, is sought to be reviewed by writ of eror in this Court.

The record herein presents for the consideration of this Court:

First, the question as to whether or not a review of this case may be entertained in this Court on a writ of error. The judgment complained of herein being that rendered by a State Court of last resort, in which the valuation for rate-making purposes of a public utility is fixed and determined by a lawful tribunal on a state of facts presented for its consideration and such tribunal's action being concededly within its jurisdiction, as well as that of the judgment of the court of last resort in confirming it; the action of neither of which tribunals raised a Federal question, making such final judgment so reached subject to be reviewed by a writ of error in this Court. This question is presented in a motion made herein to dismiss the writ of error and a brief in support of said motion accompanies the same, to which reference is made for a consideration of this question.

Second, does the finding of the Public Service Commission of West Virginia in fixing the value of the Water Company's plant and property for rate-making purposes at the sum of $460,000.00 amount to a confiscation of its property and deprive it of due process of law in violation of the Fourteenth Amendment to the Federal Constitution? This is the only other question presented herein, which may not call for consideration in the light of the first question presented.

ABSTRACT OF THE CASE.

(For convenience the plaintiff in error will be referred to herein as the Water Company, and the defendant in error, City of Bluefield as the City.)

History of Water Company.

The Water Company was organized as a West Virginia corporation in July 1890, for the purpose of operating a water plant and "building and leasing or otherwise disposing of houses; erecting one or more hotels, with full power and authority to acquire and hold such lands and property, rights and interests as may be useful or necessary for any of the purposes, and to sell, grant, mortgage and otherwise dispose of the same." After its organization, in December, 1890, it issued capital stock in the sum of $252,000.00 Or this amount $194,000.00 was issued to the Virginia Land Company for the following properties:

230 Acres Real Estate in Bluefield	$69,000.00
15 Houses	28,500.00
Water Works Plant at Bluefield	14,282.10
4 Springs bought of Baileys	3,600.00
Lots on Princeton Avenue	13,330.00
Cash	65,287.90
Total	$194,000.00

And $58,000.00 of its stock was issued to the Virginia Investment Company for the following properties:

Davidson Tract of 144 Acres	$36,000.00
22 Lots in old Bluefield	16,000.00
4 Houses at Bluefield	6,000.00
Total	$58,000.00

So that the properties acquired by the Water Company from the Virginia Land Company and the Virginia Investment Company represented the in-

itial capital investment of the Water Company; with which property the Water Company began in the early part of 1891 to operate in the City of Bluefield a water plant and also a land improvement department; the original idea being to operate the water plant so that the real estate may be cut up into lots and sold for residence and industrial purposes.

The Water Company operated its water plant and land department together from the time of its organization up to December 31, 1907. During this period on a capital of $252,000.00 a net profit of $347,556.24 was earned, or 8.14% on the investment. (See Vol. II, P. R. 1028).

On January 1, 1908 the property of the Water Company was divided and all land and houses not used in operating the water plant were transferred to a land department, and the water plant operated by the Water Company separately.

The Water Company's records show that from January 1, 1908 up to December 31, 1915, it has earned a gross profit of $98,545.24, or an average gross earning of $12,318.15 per year. (See Vol. II, P. R. 1030).

At the time of the organization of the Water Company the water plant investment proper amounted to $27,663.87, and the investment in the Water Company's plant and property proper for the

respective years from 1890 up to and including 1915, is as follows:

	Plant	Inventories	Total
1890	$	$	$ 27,663.87
1891			38,833.39
1892			65,319.88
1893			67,460.70
1894			68,382.55
1895			72,770.71
1896			72,924.72
1897			74,249.38
1898			75,842.20
1899			77,802.71
1900			94,942.54
1901	132,695.61	134.60	132,830.30
1902	135,243.52	2,110.51	137,354.03
1903	139,976.54	3,744.11	143,720.65
1904	150,179.68	5,073.81	155,253.49
1905	154,922.31	4,563.77	159,486.08
1906	191,475.68	5,963.61	197,439.29
1907	265,270.50	7,431.59	272,802.09
1908	290,344.05	10,385.85	
1909	304,074.59	7,807.45	311,882.04
1910	309,788.57	8,269.42	318,057.99
1911	320,544.65	8,732.31	329,276.96
1912	349,991.52	11,424.37	361,415.89
1913	366,468.20	10,774.43	377,242.63
1914	379,551.78	13,524.27	393,076.05
1915	390,046.96	17,835.61	407,882.57
Total	$390,046.96	$ 17,835.61	$407,882.57

(See Exhibit F, with report of H. E. Nease, P. R. 1026).

During the same period the Water Company depreciated this property in the sum of $83,455.19,

leaving as of December 31, 1915, a net investment in all of its plant and property in the sum of $324,-427.38, at which figure the Water Company carried its plant and property investment on its books as of that date. At the same date, December 31, 1915, the land department, which was originally operated by the Water Company, was carried on the land department's books at $88,410.66. (See Vol. II, P. R. 1030).

It is well to observe that in the beginning the sum of $252,000.00 represented the investment value of both the water and land departments of the Water Company, of which amount $27,663.87 represented the investment in the water plant and property and the balance of $224,336.13 represented the investment of the land department; and that as of December 31, 1915, the water department's investment grew to a net value of $324,427.38, and that the Water Company's land department shrunk or decreased over the same period of time from $224,336.13 to an investment of only $88,410.66.

The Water Company, from the year of 1915 to December 31, 1920, expended $69,000.00 more on its plant equipment, over which period it depreciated this investment in the sum of $28,000.00, making a net investment over this period of $41,000.00. This, added to the net investment as of December, 1915, makes a net investment in the Water Company's water plant proper as of December 31, 1920, of $365,427.38. (See Vol. II, P. R. 1316).

West Virginia Public Service Commission.

The Public Service Commission was created in the State of West Virginia by her Legislature in the year 1913, which tribunal is given, under the act of its creation, such general powers of public utility rate-making and regulation customarily obtaining in other states pertaining to the same subject matter and is much fashioned after the Interstate Commerce Commission, being given similar power and authority over public utility state regulation as is given by Congress to the Interstate Commerce Commission over interstate public utility rate-making and regulation. (See United Fuel Gas Co. v. Public Service Commission, 73 W. Va. 571).

History of This Case.

Shortly after the creation of the Public Service Commission in West Virginia the Water Company made application for an increase in rates and received an increase, not as much, however, as was asked. From the rate then given it appealed to the Supreme Court of the State, claiming then, as now, that it was being deprived of its property without due process of law. This appeal was dismissed by Supreme Court of the State because the order appealed from was temporary and not subject to appeal. (See Vol. II, P. R. 1082-1104, Case No. 368).

Shortly thereafter the Water Company made another application to the Public Service Commission for another increase in its water rates, and after a hearing upon its application was granted, on

the 31st day of December, 1919, another increase. (See Vol. II, P. R. 1206-1207, Case No. 895).

In less than a year after this increase it made another application for further increases in its rates. (See Vol. II, P. R. 1208-1218, Case No. 1138).

It will be observed that in case No. 368 the Commission fixed the valuation of the Water Company's plant and property for rate-making purposes at the sum of $360,000.00, and gave to it a rate which would return to it 8% on its invetment over cost and maintenance. That in the last application for further increase in rate, in Case No. 1138, the Water Company asked for a revaluation of its plant and property; and after inventories and appraisements were made by engineers for the Water Company, the City, and the Commission, and the report of the Commission's statistician on the Water Company's investment, the Commission on September 7, 1921, fixed and determined a fair and reasonable value of the Water Company's plant and property for rate-making purposes to be $460,000.00, and gave to the Water Company a 16% increase over its old rate in order that it may receive an 8% return on its investment over cost and maintenance. (See Vol. II, P. R. 1358-1373).

That not being satisfied with this further increase the Water Company prosecuted an appeal to the Supreme Court of West Virginia, which tribunal, upon a hearing on the 14th day of December, 1921, confirmed the action of the Public Service Commis-

sion in fixing the Water Company's plant and property value at $460,000.00. (See Vol. II, P. R. 1373-1380).

And it is to review the action of the Supreme Court of West Virginia in thus confirming the valuation fixed by the Public Service Commission on the Water Company's plant and property, that this writ of error is now being prosecuted.

History of Water Company's Operation.

In this connection it is well to observe that no public utility rate-making and regulation tribunal existed as such in the State of West Virginia prior to 1913. That the Water Company operated under an exclusive franchise, given to it by the City of Bluefield, from 1890 up to 1913, the time of the creation of the Public Service Commission in the State. That under its francise under which it operated during this period of twenty-three years, it furnished water to the citizens and inhabitants of the City of Bluefield at the rate of twenty-five cents (25c) per one thousand (1,000) gallons for consumers by meter, and at the old rate established in 1890 for those not using a meter. (See Vol. II, P. R. 1025-1026). That during this period it raised no complaint about not receiving a fair return upon its investment, and from an examination of its plant investment account, Exhibit F with the report of H. E. Nease, statistician, (see Vol. II, P. R. 1026), it will appear that its gross investment in 1913 was $377,242.63, as against a gross investment in 1915

of only $407,882.52; and in a period of less than five years after the creation of the Public Service Commission the Water Company, upon its own application, has had its rates increased three times, over and above the original rate fixed upon in its franchise; which increases gave to it a much larger rate of return than that provided under its francise, under which it had been for twenty-three years satisfied and contented to operate. The population served during the period from 1890 to 1913, on an average, was less than half the population served in the average period since then. Its supply of water and plant equipment with which to carry the water to the City were practically the same during the earlier period as it has been since, the additional expenditure being largely in making new connections for new consumers. Through this earlier period of twenty-three years the country passed through two panics and a war, which caused depressions, and in turn, inflations, of which facts the Court will take judicial knowledge; and still in it all and through it all the Water Company furnished water at its franchise rate.

Review of Evidence.

Does the valuation of $460,000.00 amount to a confiscation of the Water Company's property, in violation of the Fourteenth Amendment to the Federal Constitution? The question of a fair and reasonable valuation to be given to the Water Company's plant and property, used and useful in the public service, was a matter claiming the attention

and consideration of the Public Service Commission of West Virginia for quite an extended period of time, as will appear from the elaborate record in this case. Before fixing a valuation, the Commission had before it an appraisement and inventory of the Water Company's property, made by its engineer W. Q. Gallaher. This engineer's report may be found in Vol. II of of the Printed Record, pages 1194 and 1291, and is based upon the reproduction new, as of December 31, 1915, less depreciation, theory. This engineer fixes the Water Company's gross value, as of December 31, 1915, at $362,736.70, and additions made from 1915 up to December 31, 1920, at $67,520.53, making a total gross value as of December 31, 1920, of $430,257.23, less depreciation up to that period of $81,786.35, leaving the net value of the Water Company's plant and property, as of December 31, 1920, the sum of $348,470.88. Included in this net value is 13% for overhead costs, such as engineering and superintendence, 4%; general administration and legal costs, 1½%; general cost during construction, 1½%; interest during construction, 3%; peliminary organization and development, 3%; which 13% for these purposes makes the sum of $36,993.50, deducted from the above net value, leaving the physical value as of December 31, 1920, the sum of $311,477.38.

Another engineer, W. E. Miller, formerly Chief Engineer for the Wisconsin Public Service Commission, submitted his inventory and appraisement of the plant and property of the Water Company,

which will be found in Vol. II of the Printed Record, pages 962-1038. This engineer, following the reproduction new theory, as of December 31, 1915, finds the gross value of the Water Company's plant and property to be $389,189.00, subject to be depreciated in the sum of $29,869.00, leaving a net value, as of December 31, 1915, of $359,320.00. To this, however, this engineer adds for going value the sum of $16,302.00 and operation in the sum of $7,500.00, which makes a total of $383,122.00. From December 31, 1915, up to December 31, 1920, the Water Company expended $69,000.00 on its plant and property, which sum is subject to be depreciated in the sum of $28,000.00, leaving a net investment during this period of $41,000.00. This, added to the net value as fixed by Engineer Miller, as of December 31, 1915, makes a total net value, as of December 31, 1920, of $400,320.00, as against $460,000.00 allowed and fixed by the Commission.

Alvord and Burdick, engineers for the Water Company, also submitted an inventory and appraisement of the Water Company's plant and property valuation, fixing the net value of its property on the reproduction new theory at 1915 prices at $540,000.00. (See Vol. I, P. R. 383-550). A second valuation is submitted by these same engineers, as of July 1, 1920, on the reproduction new theory, less depreciation, at pre-war prices, at the sum of $624,548.00. (See Vol. II, P. R. 1278). The same engineers submitted also another valuation, based on reproduction new theory at prices prevailing in

July, 1920, in the sum of $1,155,368.00. (See Vol. II, P. R. 1281-1283).

In addition to these various appraisements the Commission had before it the amount of the Water Company's capital investment, as well as a complete history of its operation, from all of which it made its findings of valuation. The appraisements submitted by the Water Company's engineers agreed practically with the appraisements made by the other engineers, with the exception of intangibles, which will be more particularly pointed out and discussed hereinafter.

Inadequate Water Supply.

During the past several years the Water Company has not been able to furnish an adequate water supply to meet the needs and demands of the consumers. For three or four months in each year, covering the dry period, the water shortage has grown so acute as to very seriously affect the general community served, making it necessary in some instances to close public schools; rendering sanitation of the City hazardous to health; and increasing the fire hazard by not having water for fire fighting purposes, thereby increasing the insurance rate, over what it otherwise would be, 20%; and causing general and serious inconvenience to the citizens and inhabitants of the City. (See Vol. II, P. R. 1347-1355).

This water shortage condition has been occasioned due to the fact that the Water Company has failed for a number of years to provide storage reservoirs in which to collect the water in the wet season to carry over the dry period; on account of which condition the Public Service Commission entered an order herein, requiring the Water Company to install additional and necessary equipment to remedy this water shortage condition. (See Opinion of Commissioner Wiles, Vol. II, P. R. 1370).

A review of the history of this Water Company's operations will show that its main object has been from the beginning to operate its water plant with the view of developing and making salable its real estate, and no plan beyond this has been adopted with the view of taking care of the needs and demands of a growing community. Its plant consists of one built by piecemeal construction, and as is stated by Engineer Miller, if the water plant was now to be constructed and reproduced for the purpose of serving the community, certainly no such plant as the Water Company now has would be installed. (See Vol. II, P. R. 962).

Water Rights.

Counsel for the Water Company criticize the opinion of the Supreme Court of this State, wherein reference is made to other nearby and available

water supplies other than the springs from which water is now being obtained, and the statement is made by opposing counsel that no such other water sources, as referred to by Judge Miller, exist. From an examination of the record it will be found that Bluestone River lies to the west of Bluefield, a distance of less than four miles, from which source of supply the Water Company's own engineer made his estimate on the value of the Water Company's present supply. (See estimate of Alvord and Burdick, Vol. I, P. R. 542). This river supply is as close to the City of Bluefield as is the Water Company's Ada springs supply, and can be pumped into the City under about the same pressure.

The Court will also take judicial knowledge of the fact that New River is immediately east of the City of Bluefield, its nearest point being about twenty miles. The record also discloses that very many streams of water, such as Brush Fork or Creek and others, are nearby the City.

The matters pertaining to the history of this water plant were pertinent facts to be considered by the rate-making tribunal in reaching a conclusion as to a fair value to be fixed upon the Water Company's plant and property for rate-making purposes. Hence, the reason for thus pointing them out.

POINTS AND AUTHORITIES.

Due Process of Law.

The Supreme Court of West Virginia has held that the function of public utility rate-making is legislative and that under the Constitution of West Virginia the judiciary is without jurisdiction to supervise or interfere with the legislative powers of public utility rate-making, except where the legislative tribunal goes beyond the power which it could constitutionally exercise or beyond its statutory powers or bases its conclusions upon a mistake of law. Such a construction as this has been given to Section 16 of Chapter 15-O of the Code of West Virginia, which it is submitted does not deny to the Water Company the right of due process of law in the matter of fixing rates by the Public Service Commission of West Virginia. Under the Public Service Commission Act of West Virginia, the Commission, after full and fair hearing, makes findings of facts upon which it exercises its delegated legislative power of rate-making. To say that another tribunal should review and supervise the action of the Public Service Commission in rate-making would simply amount to contending for two legislative tribunals with power to do the same thing. Even if under our Constitution the judiciary of this State was given the power and authority to review the action of the rate-making tribunal and to fix and establish rates, its action in this respect would be extra-judicial or legislative in character.

The Supreme Court of our State had before it

this identical question in the case of United Fuel Gas Co. v. Public Service Commission, 73 W. Va. 571, 80 S. E. 931, and disposed of it as follows:

> "This court by section 16, chapter 9, Acts 1913, is given jurisdiction not by appeal, but as upon original process to review an order of the Public Service Commission created by said act, and such jurisdiction is limited to matters purely judicial and does not extend to matters purely administrative, executive or legislative, such jurisdiction not being conferred by the Constitution.
>
> "This statute so construed is not void as depriving a public service corporation, without due process of law, of rights guaranteed to it by the state or federal Constitution. The process of such Public Service Commission provided in said act, with right thereby given to have a review of the order or judgment of said Commission by this court, as to matters judicial involved therein, and as provided thereby, satisfying the requirement of due process and other constitutional rights protected by the Constitution.
>
> "Sections 5, 6 and 7 of said act (Acts 1913, c. 9), adapted to all kinds of public service corporations, are in substance sections 12, 2 and 3, of the Interstate Commerce Act (Act Feb. 4, 1887, c. 104, 24 Stat. 383, 379, 380 (U. S. Comp. St. 1901, pp. 3162, 3155), and as interpreted by the Supreme Court of the United States, with respect to orders and judgments of the Interstate Commerce Commission, the orders of the Public Service Commission are final and not subject to judicial interference on review by this court, unless '(1) beyond the power which it could constitutionally exercise; or (2) beyond its statutory power; or (3) based upon a mistake of law.'"

As is well said by Miller, P. in this case, even if the court had constitutional authority to make rates, the action of the court would remain extra-judicial and legislative or administrative, the same as that of the Commission, and in the case of Prentis v. Atlantic Coast Line Co., 211 U. S. 210, 53 L. Ed. 150, this doctrine is approved. The making or regulation of rates says Mr. Justice Holmes in the Prentis case is legislative, not judicial, no matter what may be the dominant character of the body in which this may take place; it is the character of the procedings and the ultimate end in view that characterizes the act.

Again in the case of Luisville & Nashville Railroad Co. v. Green Garrett, 231 U. S. 298, 58 L. Ed. 229, this Court in a case involving the railroad commission law of the state of Kentucky, in which no provision was made for an appeal or review to the courts, such as is made in the West Virginia statute, Mr. Justice Hughes, in delivering the opinion of the Court, announces the following doctrine:

> "It is insisted that the failure to provide for an appeal to any court from the final order of the commission, or for a judicial review of the reasonableness of the prescribed rates before they become effective, makes the statute void. But the statute does not deny to the carrier the right of access to the courts for the purpose of determining any matter which would be the appropriate subject of judicial inquiry. We have not been referred to any decision of the state court holding that the statute should be so construed (Chicago, M. & St. P. R. Co. v. Minnesota, 134 U. S. 418, 456, 33 L. ed. 970, 980,

3 Inters. Com. Rep. 209, 10 Sup. Ct. Rep. 462, 702). If the commission establishes rates that are so unreasonably low as to be confiscatory, an appropriate mode of obtaining relief is by bill in equity to restrain the enforcement of the order. * But it is the province of the legislature to make the law; and when the legislature, or the body acting under its authority, establishes the rate to be thereafter charged by the carrier, it is the duty of the courts to enforce the rule of law so made unless the constitutional limits of the rate-making power have been transgressed. The rate-making power necessarily implies a range of legislative discretion; and, so long as the legislative action is within its proper sphere, the courts are not entitled to interpose and upon their own investigation of traffic conditions and transportation problems to substitute their judgment with respect to the reasonableness of rates for that of the legislature or of the railroad commission exercising its delegated power. It may be assumed that the statute of Kentucky forbade arbitrary action; it required a hearing, the consideration of the relevant statements, evidence, and arguments submitted, and a determination by the commission whether the existing rates were excessive. But, on these conditions being fulfilled, the questions of fact which might arise as to the reasonableness of the existing rates in the consideration preliminary to legislative action would not become, as such, judicial questions to be re-examined by the courts. The appropriate questions for the courts would be whether the commission acted within the authority duly conferred by the legislature, and also, so far as the amount of compensation permitted by the prescribed rates is concerned, whether the commission went beyond the domain of the state's legislative power and violated the constitutional rights of property by imposing confiscatory requirements."

Rate Making.

Courts do not make rates for public utilities; their only power is to test the reasonableness of rates upon constitutional grounds. This is held in the Minnesota rate cases, (Simpson v. Shepard) 230 U. S. 352, 57 L. Ed. 1511, wherein Mr. Justice Hughes uses the following language:

> "The rate-making power is a legislative power and necessarily implies a range of legislative discretion. We do not sit as a board of revision to substitute our judgment for that of the legislature, or of the commission lawfully constituted by it, as to matters within the province of either. San Diego Land & Town Co. v. Jasper, 189 U. S. 439, 446, 47 L. ed. 892, 896, 23 Sup. Ct. Rep. 571."

In the very recent case Newton v. Consolidated Gas Co., —— U. S. ——, 66 L. Ed. 305, Mr. Justice McReynolds expresses it as follows:

> "Rate making is no function of the courts, and should not be attempted, either directly or indirectly."

Valuation For Rate Making.

Counsel for the Water Company insist that the reproduction new theory at present cost is the exclusive manner and method by which to determine the value of a public utility for rate-making purposes; and insist with much vigor that the abnormally high prices occasioned on account of the World War should be adopted in ascertaining the present value of the Water Company's plant and properties for rate-making purposes; and submit that the evidence of the Water Company's engineer,

presenting this one element of value is all that is worthy to be considered in fixing a rate-making value upon the Water Company's plant and property. It is not here contended that a public utility is not entitled to a fair return upon the fair and reasonable value of all of its plant and property then used and useful in the public service, but we submit that the fair and reasonable value of a public utility's plant and property is not to be ascertained by adopting only one method of valuation to the exclusion of all other known methods and elements of value. A valuation of a public utility, such as would be fair to the public as well as the utility, should take into consideration the original cost or investment in the utility; the market value of its stocks or bonds, if any; the probable earning capacity of the property; the various rates it has received and the rate it is receiving; the amounts necessary to meet operating expenses; the ability of the utility to adequately perform the public service; the history of the operations of the utility; and perhaps other elements; and after taking all of these into consideration, fix a value that will be fair both to the public and to the utility.

No better rule for the fixing of values has been established than that announced by this Court in the case of Smyth v. Ames, 169 U. S. 466, 42 L. Ed. 819, in which the learned Mr. Justice Harlan, in delivering the opinion of the Court, concludes a most careful and exhaustive review of this question, as follows:

> "We hold, however, that the basis of all calculations as to the reasonableness of rates to be charged by a corporation maintaining a highway

under legislative sanction must be the fair value of the property being used by it for the convenience of the public. And, in order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses, are all matters for consideration, and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property. What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience. On the other hand, what the public is entitled to demand is that no more be exacted from it for the use of a public highway than the services rendered by it are reasonably worth."

This rule for public utility valuation has been followed in all subsequent decisions by this Court:

San Diego Land & Town Co. v. Jasper, 189 U. S. 439.

San Diego Land & Town Co. v. National City, 134 U. S. 739.

Knoxville v. Knoxville Water Company, 212 U. S. 1.

Des Moines Gas Co. v. Des Moines, 238 U. S. 153.

Wilcox v. Consolidated Gas Co., 212 U. S. 19.

It is expressly approved in the Minnesota Rate Cases, 230 U. S. 352, wherein Mr. Justice Hughes, commenting upon this rule, quotes from this case at length.

The fair and reasonable value of the plant and property of the public utility is to be determined by taking into consideration all of the elements or methods by which public utility values are ascertained. If by taking one element or method of value a conclusion is reached, which is out of all proportion with a conclusion that may be reached by taking other methods, then that measure or method should be adopted, which will, after taking into consideration all of the elements of value, make a fair and reasonable value on the utility's property, used and useful in the public service.

This Court has never held that the only method of determining public utility values was the reproduction theory at present prices. The most that this Court has ever said for this theory is that it, together with other methods, may be taken into consideration in arriving at a fair value. (See Smyth v. Ames, supra, and other cases cited).

The Water Company in this case insists that the reproduction at 1920 war-time prices theory should be adopted to the exclusion of every other method and element of valuation; and on this contention insists that because this method of valuation is not adopted in toto, to the exclusion of every other method, that it is being deprived of its property without due process of law.

Reproduction Theory.

The reproduction theory of public utility valuation has been usually resorted to by the public to safeguard itself against values of public utilities, based upon inflated and watered stock investments,

purporting to represent original cost. Practically all, if not all, of the decisions of this Court, in which this theory of valuation was even considered, were cases of this character; and even in them this Court has never held that the reproduction new theory at present prices was an exclusive method by which public utility values are to be determined.

Smyth v. Ames, supra.

Whitten on Valuation Public Service Corporations, Chap. V, Page 82, et seq.

2 Wyman on Public Service Corporations, Chap. 32.

Coal & Coke Ry. Co. v. Conley, 67 W. Va. 129.

And in the Minnesota Rate Cases, 230 U. S. 352, 57 L. Ed., at page 1556, Mr. Justice Hughes very clearly states it as follows:

> "The basis of calculation is the fair value of the property used for the convenience of the public."

Citing Smyth v. Ames, supra; San Diego Land & Town Co. v. National City, supra; Wilcox v. Gas Co., supra; and continues as follows:

> "The ascertainment of that value is not controlled by artificial rules. It is not a matter of formulas, but there must be a reasonable judgment, having its basis in a proper consideration of all relevant facts. The scope of the inquiry was thus broadly described in Smyth v. Ames, 169 U. S. 546-547."

And the rule announced in that case is quoted.

Reproduction Theory Not Proper To Be Used In Abnormal Times.

If determining public utility values for rate-making purposes is to be accomplished by using the reproduction new theory at present prices, to the exclusion of every other element and method of values, then it may well be seen to what uncertain, as well as unfair, consequences it may lead. If the market is abnormally low and a valuation on this theory is made at such a time, without taking into consideration past costs or other elements of value, it would be manifestly unfair to the utility. Likewise, if this theory of valuation is used at a time of abnormally high prices in the market, such as was produced by the World War, and all other methods and elements of values are excluded, then it would be most unfair to the public, who would be expected to pay rates of return upon such unfair value so reached.

The case of Power Company v. Utilities Commission, 276 Fed. 330, is cited by counsel for the Water Company as supporting this reproduction theory of valuation. The dissenting opinion of Chief Justice Smythe in that case gives much stronger reasons for repudiating the reproduction new method than does the opinion of the Court for following it. He reasons as follows:

> "I do not think any part of the increase should be included, because, in my judgment, it has no tendency to indicate the fair value of the property. The increase is not due to investment by the company, but results solely from the World War, which has demoralized market conditions and rendered

property values unreliable. To accept such an increase as a standard of values would be to adopt an unstable measure, which would lead to injustice."

Mr. Justice Hughes, as referee in the Brooklyn Borough Gas Co. v. Public Service Commission, decided July 24, 1918, speaking on this question, says:

"To base rates upon a plant valuation simply representing the hypothetical cost of reproduction at a time of abnormally high prices due to exceptional conditions would be manifestly unfair to the public, and likewise to base rates upon an estimated cost of reproduction far lower than the actual bona fide and prudent investment because of abnormally low prices would be unfair to the company."

And concludes by condemning the standard or method of reproduction new theory, as follows:

"This would result in allowing a public service corporation to take advantage of a public calamity by increasing its rates above what would be a liberal return not only on an actual investment, but upon a normal reproduction cost, in the view that unless it could make an essentially exorbitant demand upon the public it would be deprived of its property without due process of law."

It is submitted that Mr. Justice Hughes is thoroughly competent to speak with authority on this question, having, while as an associate justice on this Court, made a most exhaustive examination and review of it in the Minnesota Rate Cases.

In New York Public Service Commission No. 5, P. U. R. 930, the application of this theory is denied.

"In the present juncture of universal upheaval the application of such a postulate of evaluation to

rate-making would lead to startling consequences."

And in the very recent case of Newton v. Consolidated Gas Co., —— U. S. ——, 66 L. E. 305, this Court, in an opinion delivered on March 6, 1922, by Mr. Justice McReynolds, repudicates this reproduction new theory at present prices, as follows:

> "Upon such a situation and such a prospect, I think that the complainant company has shown itself, clearly and beyond all reasonable doubt, entitled to relief from the statutory limitation on its rates, but that its rate of return should be calculated, NOT UPON THE PRESENT HIGH REPRODUCTION COST OF ITS PROPERTY, WITH OR WITHOUT THE DEDUCTION OF OBSERVED OR ACTUAL DEPRECIATION, IN WHATEVER MANNER COMPUTED, BUT UPON THE ACTUAL, REASONABLE, INVESTMENT IN THE PROPERTY DEVOTED TO THE SERVICE OF THE COMPLAINANT'S CONSUMERS." (Italics ours.)

Decisions of some of the Federal District Courts and State Courts are cited by counsel for the Water Company, in support of this reproduction new theory as a standard of valuation. It is submitted that they are not entitled to as much consideration as is the decision of the Supreme Court of West Virginia in this case. All of these character of cases largely depend for their solution upon their own particular facts, and each is controlled accordingly. And for this reason the decision of the West Virginia Court in this case, being certainly of equal rank to that of any of the other state courts and being applicable to the peculiar state of facts presented in this case, is entitled to much more consideration.

The reasoning employed by the learned Judge of the West Virginia Court discloses that the Court reached a conclusion based upon considerations of all the elements that go to make up a fair value for a public utility; and in accordance with good legal reasoning, applicable to the facts in this case, the West Virginia Court, in its opinion by Miller, J., passes upon this reproduction theory of valuation as follows:

> "In our opinion the commission was justified by the law and by the facts in finding as a basis for rate making the sum of $460,000.00. No fixed standard or formula applicable to all cases has yet been established by statute, judicial decisions, or by the judgment of public service commissions. Courts and commissions have, as in the instant case, been mainly controlled by the facts developed in each individual case. In our case of City of Huntington v. Public Service Commission, decided at the present term, we considered the true basis for rate making 'the actual fair value of the investment at the time used and useful in the business of furnishing service to the public.' This was held to be the true basis in the leading case of Smyth v. Ames, 169 U. S. 466. In that case the court said: 'We do not say that there may not be other matters to be regarded in estimating the value of the property. What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience.' That the basis of production new less depreciation cannot be adopted with fairness to the utility or to the public is well illustrated in the case of Steenerson v. Great Northern Railway Company, 69 Minn. 353, where it is supposed that at the time the railroad was built rails cost $85.00 per ton and the present price was only $16.00 per ton, so that when built the railroad cost $40,000.00

per mile, and if built at the time of the controversy, it could be built for $12,000.00 per mile. In such a case it would be unfair to the corporation to take as a basis for revaluation the reproduction cost new less depreciation. The Minnesota rule, so-called, has not received the approval of many of the state or federal courts. 2 Wyman on Public Service Corporations, sec. 1107 et seq. In our case of Coal & Coke Ry. Co. v. Conley, 67 W. Va. 129, it is said: it seems to be generally held that, in the absence of peculiar and extraordinary conditions, such as a more costly plant than the public service of the community requires, or the erection of a plant at an actual, though extravagant, cost, or the purchase of one at an exorbitant or inflated price, the actual amount of money invested is to be taken as the basis and upon this a return must be allowed equivalent to that which is ordinarily received in the locality in which the business is done, upon capital invested in similar enterprises. In addition to this, consideration must be given to the nature of the investment, a higher rate being regarded as justified by the risk incident to a haxardous investment.'

"That the original cost considered in connection with the history and growth of the utility and the value of the services rendered consitute the principal elements to be considered in connection with rate making, seems to be supported by nearly all the authorities. Whitten on Valuation of Public Service Corporations, Ch. V, page 82 et seq. All the leading cases on the subject are there discussed. See also, 2 Wyman on Pub. Serv. Corp., Ch. XXXII, covering the same subject. In the case at bar, the commission, agreeable to these authorities, properly took into consideration all the elements going to establish the fair value of the petitioner's property on

which it is entitled to earn a fair return, and we perceive no error therein justifying us in suspending its order on that ground. It has included a fair sum for going value, working capital, and the value of the utilities employed in connection therewith."

Elements Of Value Considered by The Commission.

Counsel for the Water Company insist that the value fixed by the Commission herein was arbitrarily determined without any evidence of value in support of it, and further state that all of the inventories of values submitted by the enginers were in excess of that found by the Commission. The inventory appraisements found by each of the engineers have already heretofore been pointed out, from which it will be seen that none of the values so submitted by any of them amount to as much as the value fixed by the Commission, except that of the engineer for the Water Company. It is true that the other engineers, in arriving at the values fixed by them in their respective inventories, took unit prices in 1915 as their basis for reproduction new; for all of the plant and property of the Water Company, representing its investment from 1890 up to 1915, at which period of time such reproduction new value, less depreciation, shows a value of the Water Company's plant and property far in excess of its actual investment. This was certainly fair to the Water Company to have its property, representing its investment during this period, to be valued on the highest market during that period; and from 1915 to 1920, at a time when the market was uncertain, unsettled, and abnormally high, on account of con-

ditions growing out of the World War, the Water Company was given a valuation for all additions and extensions to its plant during this period as would represent the actual amount invested at the time. This, it is submitted, was likewise fair to the utility. This was the method employed by engineers Gallaher for the Commission and Miller for the City in inventorying the value of the Water Company's plant and property.

In addition to this, the Commission had before it the actual investment made by the Water Company in its plant. It also had a complete history of the operations of the Water Company's plant, as well as all conditions under which the same were operated.

And in view of all these elements of value it fixed the sum of $460,000.00 as the amount to which the Water Company was entitled as a return for rate-making purposes. This value is much larger than the actual investment of the Water Company, is likewise in excess of the value reported by engineers Gallaher and Miller, and is only exceeded by the speculative estimates furnished by the Water Company's engineer. Three separate estimates of value are submitted by the Water Company's engineers; the first purporting to represent the reproduction new of the plant as of Jnuary 1, 1915, at $540,000.00. In this estimate are included the following items:

(See Vol. II, P. R., 1376-1377)

1.	Preliminary Cost	$14,455.00
3.	Water Rights—Gravity Springs	40,000.00
4.	Water Rights—Ada Springs	6,683.00
6.	Water Rights—Beaver Pond Springs	2,317.00
40.	Cutting Pavements over Mains	28,685.00
44.	Cutting Pavements over Service	22,395.00
54.	Administrative and Legal Costs	8,960.00
55.	Contingent Expenses	17,920.00
56.	Interest during Construction	16,368.00
57.	Going Concern Value	16,328.00
58.	Operating Capital	5,000.00

These items aggregating the sum of $185,089.50 all of which sums, it is submitted, represent purely speculative estimates. There is absolutely no evidence in the record that a single penny was expended by the Water Company for any of these items that were represented by the Water Company's engineer as items of value. If they are deducted, which they must be in reaching what would be a fair value, from the sum of $540,000.00, we find a net value in the Water Company's plant at that time of $354,-910.50. The Commission at that time, upon that showing, together with other evidence, fixed the fair value of the Water Company's property at the sum of $360,000.00. (See Vol. I, P. R., 398.)

The second estimate of value submitted by the Water Company's engineer was as of July 1, 1920, based upon pre-war prices, which was fixed at the sum of $624,548.00. In this estimate the Water Company's engineer fixed a value on the above enumerated items of intangibles at the aggregate amount of $266,896.00, without any evidence to show that the Water Company had invested any

money on account of any of these items. If this is deducted from the valuation of $624,548.00, we find a net value, as of July 1, 1920, based on pre-war prices, according to this engineer's estimate, of $357,652.00. (See Vol. II, P. R. 1278.)

However, at the time of the submitting of the second report the same engineers submitted a third inventory of values, as of July 1, 1920, based on the then present prices, which valuation was fixed at the sum of $1,155,368.00; but these engineers report that $900,000.00 would be about the proper reproduction value as of that date, and in this inventory these engineers fixed these various intangible items, which were listed hereinabove, at $460,216.00. In other words, these intangible items, upon which speculative values were first placed by the Water Company's engineers at $185,089.50, have increased in value from that to $460,216.00, when there is absolutely nothing in the record to show that the Water Company ever at any time expended one cent on account of any such items. Deducting this from their reported reproduction value of $900,000.00 at war-time prices, leaves a net reproduction value, as of July 1, 1920, according to the Water Company's own engineer, of only $439,784.00. (See Vol. II, P. R. 1281-1283).

These items of intangible property, based upon speculative estimates of value, should not be taken into consideration in arriving at a fair value to be given a public utility for rate-making purposes.

Water Rights

This item of water rights, estimated at $50,000.00, is in addition to all values placed upon the land on which the water is found. Towns and settlements are usually located with reference to some available water supply, and the building up of a town or settlement thus located should not and does not create a value in the water aside from the land on which it is found. When land or real estate is acquired for public purposes, the only inquiry to be made was very pertinently pointed out by Mr. Justice Hughes in the Minnesota Rate Cases, supra:

> "Would be as to the fair market value of the property; as to what the owner had lost, and not what the taker had gained."

Citing Boston Chamber of Commerce v. Boston, 217 U. S. 189, and continuing:

> "The owner would not be entitled to demand payment of the amount which the property might be deemed worth to the company; or of an enhanced value by virtue of the purpose for which it was taken; or of an increase over its fair market value, by reason of any added value supposed to result from its combination with tracts acquired from others, so as to make it a part of a continuous railroad right of way in one ownership."

The land upon which the water is found was valued by persons who took into consideration all of the items that should enter into an appropriate valuation of the land in question, which included the springs found thereon. The giving of value to water over and above any value fixed on the land on

which it is found is a distinct departure from the theory of ascertaining values by the reproduction new theory as contended for by the Water Company.

Mr. Miller, an engineer of wide reputation, most competent to speak on this question, makes this observation:

> "Any estimate of the value of the springs, or their waters, over and above the cost of purchasing and developing them, which depends upon the determination of the relative total costs of water from these and other sources is a departure from the cost of reproduction theory of valuation."
> (Vol. II, P. R. 1047).

And again:

> "The calculation of an excess value of the springs over cost of purchase and development from the saving shown by this source in comparison with some other is precisely analogous to the numerous attempts heretofore made to get the current generated by hydro-electric plants valued on the calculated cost of its generation by steam power. It is obvious that in communities where water power is readily available and no fuel for steam production is to be had locally the effect of such theory would be to deprive the people of the water power community of the benefit of having located near the water powers.
>
> "There are numerous legal authorities which have held to the principle that the benefits of immediate natural resources are not to be taken from the public and credited to the few who may use those resources in the service of the public. Such opinions are found in decisions of rate cases affecting electric light and power companies who generate current from hydraulic power.

"In this case there would be no use for and consequently no possible value to the springs if the people of Bluefield had not located in the vicinity of them. Although the springs belong to the water company, any use for and value of them is brought about by the location of the people in proximity to the springs rather than in proximity to some other water supply. People settle only where water is available, not in a desert, and the water rates they should pay should not be governed in any measure by speculation as to what rates would be necessary to meet the cost of furnishing water from some other and more remote source. This is the same principle which was followed in those electric utility rate cases which held that rates for current generated from water power were not to be made equal to those which would be necessary to meet the higher costs of steam generation."

(Vol. II, P. R. 1051-1052).

Judge Miller, speaking for the Supreme Court of West Virginia in this case, very thoroughly reviews this question as follows:

"One of the points urged by counsel for the applicant is that it was entitled to have included in the estimated value of its plant the supposed value of certain water rights purchased and owned by it, being the springs on land purchased, its present chief source of water supply. There was included in the commission's estimate the actual amount invested in the subsidiary company, the Bluefield Valley Water Works Company, but the commission denied the right of the applicant to value these water rights beyond the actual cost of the land on which the springs are located. The applicant, to fulfill the obligation of its franchise, was bound to obtain a supply of water from some source. The only source of its supply was these springs and the Blue-

stone River. The City of Bluefield, whose inhabitants it serves, was doubtless located with reference to those sources of water supply, and it, and not the utility company employing them, was entitled to the benefits of their relative location. The commission was not able to say, without much speculation, that these springs had any value beyond the value of the land on which they were located, which was included in the commission's estimate. In the case of Sherman v. California-Michigan Land and Water Company, Pub. Utility Rep. 1918D, page 93, a water rate case, the California Railroad Commission refused to allow anything for percolating waters, aside from the value of the water-bearing lands, considered for all available uses they might be put to, including the pumping of water therefrom. In Re United Fuel Gas Company, Pub. Utility Rep. 1920 C, page 583, our Public Service Commission, in accordance with numerous decisions, held that the gas company, while entitled to charge a rate based on the value of the property it devoted to the public use, was not entitled to add to this a value brought about by appreciation of the land due to the discovery of large quantities of gas. The petitioner, in addition to the springs, had as a source of supply the Bluestone River, and it does not appear that the springs land had any advantages over the river, in point of economy, in supply or operation of its plant. It does appear that the springs owned, did not at all times furnish an adequate supply of water and would not do so without the erection of impounding tanks at great expense, whereas the river would furnish an ample supply of water, if the water therefrom was requisitioned in the proper way. In San Diego Land Company v. National City, 174 U. S. 739, the question of the right to include for rate making the supposed value of water rights was mooted, but not decided. And the same question was raised, but not decided, in Denver v.

Denver Union Water Company, 246 U. S. 178, 193. The cases cited and specially relied on by petitioner, are Fairbanks v. United States, 181 U. S. 283, and United States vs. Gettyburg Electric Railway Co., 160 U. S. 668. These were condemnation cases, in which the question of the value of franchises was considered. For rate regulation the value of a franchise is not generally considered, such value being based on the capacity to earn profits; this for the reasons stated in 2 Wyman on Pub. Serv. Corp. Sec. 1104, and considered by Mr. Justice Peckham in Wilcox v. Consolidated Gas Company, 212 U. S. 19."

(Vol. II, P. R. 1377-1387).

If no value for rate making purposes should attach to water rights beyond that of the value given to the land on which it is found, which is properly chargeable, then the valuation by the Water Company's engineer of this item at $50,000.00 was improper.

Cutting Through Pavements Over Mains

On the reproduction new theory the Water Company insists that it should be given a value for this item based upon what it estimates it would cost to cut through pavements at present for the purpose of relaying its mains, and its engineer reports this item for valuation at $97,009.00. There is no evidence in the record that the Water Company at the time it laid its mains expended anything for the purpose of cutting through pavements. As a matter of fact its mains were practically all, if not all, laid before any pavement was ever made; and if it expended any money originally on this account, the

burden was on it to show such expenditure. It is not entitled to estimate what it would cost to relay its mains under conditions obtaining at the present time, which are entirely different from that obtaining when the mains were originally laid.

This Court passed upon this question in the case of Des Moines Gas Company v. Des Moines, 238 U. S. 153, 59 L. Ed. 1244, in which Mr. Justice Day, delivering the opinion of the Court, announces the following doctrine:

> "As to the item of $140,000, which, it is contended, should be added to the valuation, because of the fact that the master valued the property on the basis of the cost of reproduction new, less depreciation, and it would be necessary in such reproduction to take up and replace pavements on streets which were unpaved when the gas mains were laid, in order to replace the mains, we are of opinion that the court below correctly disposed of this question. These pavements were already in place. It may be conceded that they would require removal at the time when it became necessary to reproduce the plant in this respect. The master reached the conclusion that the life of the mains would not be enhanced by the necessity of removing the pavements, and that the company had no right of property in the pavements thus dealt with, and that there was neither justice nor equity in requiring the people who had been at the expense of paving the streets to pay an additional sum for gas because the plant, when put in, would have to be at the expense of taking up and replacing the pavements in building the same. He held that such added value was wholly theoretical, when no benefit was derived therefrom. We find no error in this disposition of the question."

So that, this large item of $97,009.00 must be eliminated from the inventory of the Water Company's engineer.

Going Value.

The Water Company's engineer estimates that the going value of the Water Company's plant and property should be fixed at $118,155.00. This, the Water Company insists, on its speculative theory of reproduction, represents the difference between an installed going concern with patrons and one that is being constructed and installed, without patrons.

Also, included in the water Company's inventory of valuations are the following items:

Engineering and Superintendence	$49,591.00
Legal Costs and Administration	19,836.00
Contingent Expenses	39,673.00
Interest during Construction	50,881.00
Operating Capital	5,000.00

And insists that these items should be taken into consideration in fixing its value for rate making purposes, and claims that the valuation fixed by the Commission is confiscatory on the theory that by allowing these large items of value it should be given a much larger valuation for rate-making purposes. These items, like the others just previously referred to herein, are not shown to represent any actual investment by the Company whatever. They are all hypothetical estimates.

In the very recent case of Galveston Electric Co. v. City of Galveston, ——— U. S. ———, 66 L. Ed. 382, this Court, in an opinion delivered by

Mr. Justice Brandeis, very exhaustively reviews this question and announces the following dectrine:

> "In determining the value of a business, as between buyer and seller, the good will and earning power due to effective organization are often more important elements than tangible property. Where the public acquires the business, compensation must be made for these; at least, under some circumstances. Omaha v. Omaha Water Co. 218 U. S. 180, 202, 203, 54 L. ed. 991, 1000, 1001, 48 L. R. A. (N. S.) 1084, 30 Sup. Ct. Rep. 615; National Waterworks Co. v. Kansas City, 27 L. R. A. 287, 10 C. C. A. 653, 27 U. S. App. 165, 62 Fed. 853, 865. And they, like past losses, should be considered in determining whether a rate charged by a public utility is reasonable. Compare C. H. Venner Co. v. Urbana Waterworks, 174 Fed. 348, 352. But, in determining whether a rate is confiscatory, good will and franchise value were excluded from the base value in Cedar Rapids Gas Light Co. v. Cedar Rapids, 223 U. S. 655, 669, 56 L. ed. 594, 32 Sup. Ct. Rep. 389, and Des Moines Gas Co. v. Des Moines, 238 U. S. 153, 169, 59 L. ed. 1244, 1252, P. U. R. 1919 D, 577, 35 Sup. Ct. Rep. 811; and the expressions in Denver v. Denver Union Water Co. 246 U. S. 178, 184, 191, 62 L. ed. 649, 658, 661, P. U. R. 1918 C, 640, 38 Sup. Ct. Rep. 278, and in Lincoln Gas & E. L. Co. v. Lincoln, 250 U. S. 256, 267, 63 L. ed. 968, 976, 39 Sup. Ct. Rep. 454, are not to be taken as modifying in any respect the rule there declared. Going concern value and development cost, in the sense in which the master used these terms, are not to be included in the base value for the purpose of determining whether a rate is confiscatory.
>
> "The other item included by the master in determining base value, but disallowed by the court,

is $67,078 for brokerage fees. There is no evidence that any sum was in fact paid as brokerage, and there was included, as above shown, the sum of $73,281 for organization and business management in calculating the historical reproduction cost. The finding of the master rests upon testimony that bankers customarily get, in some form, compensation equal to 4 per cent on the money procured by them for such enterprises. But compensation for bankers' services is often paid in the lessened price at which they take the company's securities, and is thus represented in the higher rate of interest or dividend paid on the money actually received by the company as capital. The reason given by the master for including the allowance for an assumed brokerage fee is that a brokerage fee is 'a normal incident of large industrial investments and has not been amortized,' since 'the record shows that the plant has been operated at a loss.' If base value were to be fixed by the money expended, brokerage fees actually paid might, with propriety, be included, as are taxes paid, pending construction. But as the base value considered is the present value, that value must be measured by money; and the customary cost of obtaining the money is immaterial. We cannot say that the court erred in refusing to include in base value an allowance for hypothetical brokers' fees."

Summarizing these items of value fixed on the Water Company's intangible property by its engineer, we find that they aggregate the sum of $460,-216.00, or more than half of the estimated valu fixed by the Water Company on its plant for rate-making purposes. By deducting these items from its estimated value of $900,000.00, we have $439,784.00 to represent the reproduction new value at 1920 prices on its physical plant and property; and a re-

production new at 1920 prices would be manifestly unfair to the public, because, as already heretofore pointed out the prices at that time were abnormally high, due to conditions growing out of the World War; and some considerable reduction should be made in order to reach what would represent a fair and reasonable value of the Water Company's property for rate-making purposes. The valuation fixed by the Public Service Commission in this case was most liberal. It ascertained the Water Company's fair value to be, in the light of the evidence before it, approximately $405,000.00, to which it added $55,000.00 for going value and working capital, making the valuation $460,000.00. (See Opinion of Commissioner Wiles, Vol. II, P. R. 1358-1371.)

If the actual investment of the Water Company was taken as a basis upon which to fix a valuation for rate-making purposes, then the Commission should, according to the evidence of the statistician, fix it at $365,427.38. In the valuation given to it, it has received $94,572.62 over and above the amount represented by its actual investment in all of its plant and property. In consideration of all the elements of value submitted to the Public Service Commission and the history of the operation of the plant, the valuation made herein is considerably more than the Water Company is entitled to have for rate-making purposes. This being true, it certainly cannot be said that the valuation given to it for rate-making purposes amounts to confiscation of its property, in violation of the Federal Constitution.

Burden Of Proving Confiscation.

A public utility is entitled to a reasonable return upon the fair value of all of its property used and useful in the public service, and it cannot claim its property is being confiscated by a showing of value based upon the present high reproduction cost of its property, but its value must be obtained "upon the actual reasonable investment in the property devoted to the service of its consumers." (Newton v. Consolidated Gas Co., supra). And the burden is upon the Water Company to show by clear, unquestionable evidence that the valuation given to it for rate-making purposes amounts to a confiscation.

Minnesota Rate Cases, supra.

Lincoln Gas & Elec. Light Co. v. City of Lincoln, 250 U. S. 256, 63 L. Ed. 968.

Knoxville v. Knoxville Water Co., 212 U. S. 1, 53 L. Ed. 371.

Eight Per Cent Return Not Confiscatory.

The Commission has determined that the Water Company is entitled to an 8% return upon the fair and reasonable value of all of its plant and property used and useful in the public service. This rate of return having been fixed, the question of the amount of actual revenue which the Water Company has been receiving in the past is not material. If what it has been receiving does not amount to 8%, upon a proper showing before the Commission its rates will be so adjusted as to give to it an 8% return.

Counsel for the Water Company insist that the 8 per cent. return amounts only to 6 per cent. and

that 2 per cent. is set aside for depreciation. Inasmuch as public utility plants are regarded as being answerable unto the law for a constant and continuing service to the public, repairs and replacements to its plant are usually provided for in its operating expenses; so that it cannot be said that the plant as a unit has any given length of life, and any method of depreciation is regarded as more or less theoretical rather than actual. So that, in this view of the case it cannot be said that a return of 8% upon the fair value of the Water Company's plant and property is confiscatory.

The legal rate of interest in West Virginia is only 6%, and there is no evidence in this case that utilities of a similar character or investments of a similar character in this State yield a greater return than 8%. In the case of Lincoln Gas & Elec. Light Co. v. City of Lincoln, supra, this Court refused to hold that a return of 7% was confiscatory. And in the case of Des Moines Gas Co. v. Des Moines, supra, this Court held "nor do we think there was error in refusing an injunction upon the conclusion reached that a return of 6% per annum on the valuation would not be confiscatory." And in the case of Cedar Rapids Gas Light Co. v. Cedar Rapids, 223 U. S. 654, 56 L. Ed. 594, this Court, in an opinion delivered by Mr. Justice Holmes on this question, held:

> "In this case the court fixed a value on the plant that considerably exceeded its cost, and estimated that, under the ordinance, the return would be over 6 per cent. Its attitude was fair, and we do not feel called upon to follow the plaintiff into

> a nice discussion of details. We perhaps should have adopted a rule as to depreciation somewhat more favorable to the plaintiff, or, it may be, might have allowed this or that item that the state court struck out, but there is nothing of which we can take notice in the case that could warrant us in changing the result."

However, in answer to this question it is sufficient to observe that it was not raised before the Commission or before the Supreme Court.

SUMMARY.

The plant of the Water Company is one that has been installed by piecemeal construction, installed for the purpose of developing real estate; and as the town grew, its plant has been extended simply to take care of present needs and demands. It appears that it is not now suitable to furnish an adequate supply of water to the City. The reproduction of the water plant for the City would certainly not contemplate the idea of reproducing such a one as the Water Company now has. But cost of reproduction of a similar plant, based on approximately a normal market, demonstrates that it may be so reproduced at much less than the value given to it by the Public Service Commission of West Virginia. Its actual investment, likewise, discloses the fact that it has not only been fairly, but generously, treated by the Public Service Commission; that it has been valued at a far greater amount than its plant

and property, under the evidence, show it to be reasonably worth. And the only support and argument for confiscation finds its basis, not in actual investment, not in what its property is reasonably worth in the public service, but in capitalizing its plant and property together with intangibles on hypothetical estimates at abnormal prices produced by conditions growing out of a world-wide calamity. And when employing this method by which to form a basis of valuation, it takes into consideration these intangible items that are not proper to be considered in fixing a value on property for rate-making purposes. All the values submitted and contended for by it are based upon hypothetical estimates, most of which are highly speculative and border on the imaginary; and by this method it asks that its property be valued for rate-making purposes, to the exclusion of every other approved and recognized method. And because the Commission and the lower court refused to ignore all other elements and methods of public utility valuation and accept its valuation based upon hypothetical estimates of reproduction new on an abnormally high market, it contends its property is being confiscated by the public, in violation of the Fourteenth Amendment to the Federal Constitution.

The increase for which it claims by reason of employing the reproduction new theory based on war prices was not occasioned on account of any additional investment, but solely on account of the World War, which cannot be resorted to as an asset

or investment upon which to base rate-making values.

It is confidently submitted that the judgment of the Supreme Court of West Virginia herein should in all respects be affirmed.

Respectfully,

RUSSELL S. RITZ,

Counsel for Defendant in Error
City of Bluefield.

Bluefield, W. Va.
January 8, 1923.

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IN THE

Supreme Court of the United States

OCTOBER TERM, 1922.

No. 256

Bluefield Water Works & Improvement Company, Plaintiff in Error,

Vs.

Public Service Commission of the State of West Virginia and City of Bluefield, a Municipal Corporation, Defendants in Error.

BRIEF ON BEHALF OF PLAINTIFF IN ERROR

I.

STATEMENT OF THE CASE PRESENTING THE QUESTIONS INVOLVED AND THE MANNER IN WHICH THEY ARE RAISED.

This case is before this honorable court on a writ of error to a judgment of the Supreme Court of Appeals of West Virginia rendered on the 14th day of December, 1921, affirming an order of the Public Service Commission of West Virginia, fixing the value of the plant and property of the Bluefield

Water Works & Improvement Company for rate making purposes at the sum of Four Hundred and Sixty Thousand Dollars ($460,000.00).

For convenience and brevity the Bluefield Water Works & Improvement Company, Plaintiff in Error herein, will be referred to hereafter in this brief as Plaintiff; the Public Service Commission of West Virginia, one of the Defendants in Error herein, as the Commission, and the City of Bluefield, one of the Defendants in Error herein, as the City.

Nature of The Case.

This case originated in a proceeding or action brought in accordance with the statutes of West Virginia, by Plaintiff before the Public Service Commission of West Virginia, asking for a revaluation of its plant and property and for an increase in the rates charged by Plaintiff to consumers of water furnished them, which proceeding resulted in an order of the Public Service Commission fixing the value of the plant and property of the Plaintiff at the sum of Four Hundred and Sixty Thousand Dollars ($460,000.00), from which final order and judgment of the Commission an appeal was prosecuted to the Supreme Court of Appeals of the State of West Virginia, which said court affirmed the order of the Commission so fixing the value of Plaintiff's plant and property.

Proceedings Before The Public Service Commission And in The Court Below.

Plaintiff in Error is a public service corporation, created and organized under the laws of the State of West Virginia, engaged in furnishing water to the City of Bluefield and its inhabitants, and as such public service corporation is subject to the control and regulation of the Public Service Commission of the State of West Virginia.

On the 14th day of April, 1915, Plaintiff filed its application before the Public Service Commission of West Virginia praying for an increase in rates, to which application the City of Bluefield appeared, and resisted the granting of the increase in rates prayed for in said application, and demanded an inventory and valuation of the plant and properties of the Plaintiff. In compliance with said demand and request Plaintiff employed the firm of Alvord and Burdick, Hydraulic and Sanitary Engineers, of Chicago, Illinois, who made an inventory of the properties of the Plaintiff as of January 1st, 1915, which inventory was accepted and adopted by the City of Bluefield and the Public Service Commission as a correct inventory of the properties of Plaintiff as of that date, (P. R. p. 22). The City employed W. E. Miller, a Hyraulic and Sanitary Engineer, of Madison, Wisconsin, to make a valuation of the properties of Plaintiff. Hearings were had before said Commission upon the said application of Plaintiff and answer of the City, at which hearing evidence was taken in support of the pleadings filed as aforesaid, (P. R. 1083); the Engineers em-

ployed by Plaintiff testified that the value of the plant and properties of the Bluefield Water Works & Improvement Company was five Hundred and Forty Thousand Dollars, ($540,000.00), (P. R. 23-24); W. E. Miller, the Engineer for the City, fixed said value at the sum of Three Hundred and Ninety-Two Thousand Dollars ($392,000.00), P. R. 966 and 1095); both of these values being based upon the reproduction new less depreciation theory of valuation. The Commission disregarded the evidence of the witnesses and fixed the value of Plaintiff's plant and properties at the sum of Three Hundred and Sixty Thousand Dollars, ($360,000.00), (P. R. 1096), and prescribed a schedule of rates to be charged by Plaintiff which the Commission contemplated would produce a net return of six per cent, and allow a return of two per cent. upon the value so fixed to cover annual depreciation. The above proceedings are designated and shown in the record herein as Case No. 368. Plaintiff being aggrieved by the order of the Commission prosecuted an appeal to the Supreme Court of Appeals of West Virginia, the petition for said appeal alleging that the value placed upon the properties was arbitrarily fixed by the Commission and that by the said order so entered by the Commission, Plaintiff was deprived of its property without due process of law and denied the equal protection of the law in violation of and contrary to the Fourteenth Amendment of the Constitution of the United States, (P. R. 7).

The Supreme Court of Appeals of West Virginia on the 31st day of October, 1917, entered its order and opinion dismissing the petition of Plain-

tiff without prejudice, upon the grounds that the said order was not final, and was not subject to the control of the Court under Section 16, Chapter 15-O of the Code of West Virginia, which is as follows:

> "Any party feeling aggrieved by the entry of a final order by the commission, affecting him or it, may present his or its petition in writing to the supreme court of appeals, or to a judge thereof in vacation, within thirty days after the entry of such order, praying for the suspension of such final order. The applicant shall deliver a copy of such petition to the secretary of the commission before presenting the same to the court, or the judge. The court or judge shall fix a time for the hearing on the application, but such hearing shall not be held sooner than five days, unless by agreement of the parties, after its presentation, and notice of the time and place of such hearing shall be forthwith delivered to the secretary of the commission, so that the commission may be represented at such hearing by one or more of its members or by counsel. If the court or the judge after such hearing be of the opinion that a suspending order should issue, the court or the judge may require bond, upon such conditions and in such penalty, and impose such terms and conditions upon the petitioner as are just and reasonable. The hearing of the matter shall take precedence over all other matters before the court except the correction of assessments. For such hearing the commission shall file with the clerk of said court all papers, documents, evidence and records or certified copies thereof as were before the commission at the hearing or investigation resulting in the entry of the order from which the petitioner appeals. The commission shall file with the court before the day fixed for the final hearing a written statement of its reasons for the entry of such order,

and after arguments by counsel the court shall decide the matter in controversy as may seem to be just and right."

The opinion of the Supreme Court of Appeals of West Virginia is found on pages 1104-1106 of the Printed Record and the points decided by the court are set out in the syllabus of the opinion found on page 1104, which is as follows:

"1. Provisional orders of the Public Service Commission, valuing the property of and fixing rates to be charged by a public service corporation for experimental purposes, and retaining the case on its docket for future action after the result of such experiment is ascertained are not final orders, subject to the control of this court under section 16 of the Public Service Commission Act.

"2. The valuation of the property of a Public Service Corporation and prescribing rates for tolls and charges for services to be rendered are purely legislative acts, not subject to judicial review except in so far and in so far only as may be necessary to determine whether such rates are void on constitutional or other grounds."

The rates so fixed by the Commission did not produce sufficient revenue to afford Plaintiff a return of eight per cent. over and above operating costs and necessary charges. On the 9th day of June, 1919, Plaintiff filed an application before said Commission asking for an increase in rates, (P. R. 1146). This application was also resisted by the City and after a hearing thereon the Commission granted an increase in rates, but not the amount prayed for by Plaintiff, and further, upon application of the City, directed plaintiff to make certain additions and

extensions to its plant and equipment, (P. R. 1056), this last mentioned proceeding was designated by the Public Service Commission as Case No. 895.

The rates for tolls and charges fixed by the Commission in the last named order failed to produce the income designated by the Commission as the amount properly allowable to Plaintiff, and on the 27th day of September, 1920, Plaintiff filed its application before said Commission alleging that the value as fixed by the Commission in its order in Case No. 368 was not, at the time the said order was entered, and was not on the 27th day of September, 1920, the fair value of the plant and property of the Plaintiff and that the said order of the Commission deprived Plaintiff of its property without due process of law, and denied it the equal protection of the law, in violation of and contrary to the Fourteenth Amendment of the Federal Constitution.

Plaintiff further set out in its application that since the order entered by the Commission on July 17, 1918, (P. R. 1145) large and valuable improvements, betterments and additions had been made to its plant and properties, and that the present true and actual value of its plant and properties was approximately One Million Dollars, ($1,000,000.00). Plaintiff prayed for a revaluation of its plant and properties, and for a review and revision of the order of the said Public Service Commission entered in said Case No. 368, and prayed that a rate be allowed to Plaintiff which would produce sufficient revenue to pay operating costs, taxes, and provide for depreciation, and also afford a fair return upon

the value of its properties, (P. R. 1208-1212). The City appeared and resisted this application also, denying the allegations contained therein, and resisting an increase in the rates. Hearings were had before the said Public Service Commission and a supplemental inventory of the properties of Plaintiff as of January 1st, 1920, was made by Alvord and Burdick, and estimates of the present fair value of the properties for rate making purposes was also made by the said firm of Alvord and Burdick and introduced as evidence before the said Commission, and made a part of the record. The evidence, reports, testimony and orders entered in cases No. 368 and No. 895 were made part of the record before the Commission, and the case came on to be heard upon all of the proceedings had therein. The evidence of the witnesses for Plaintiff placed the value of the plant and properties at the sum of One Million One Hundred and Ninety-Four Thousand Dollars ($1,194,000.00), determined by the reproduction new less depreciation theory of valuation, determined in accordance with prices existing in 1920, and by the same method of valuation placed the value of the plant at the sum of Six Hundred and Twenty-Four Thousand Dollars ($624,000.00) determined on unit prices existing from 1910 to 1915, (P. R. 1225). From these figures the Engineer for Plaintiff testified that the present fair value of the plant and properties of Plaintiff was Nine Hundred Thousand Dollars ($900,000.00) (P. R. 1226-1227).

Upon request of the City the Commission directed its engineer, W. Q. Gallaher, to check the inventory of the property of the Plaintiff, as made

by Alvord and Burdick, and to make a report upon the value of the property. The report made by W. Q. Gallaher, Chief Engineer for the Commission, is found on pages 1291 to 1351 of the Printed Record. The report shows that, in accordance with the direction of the Commission, the Engineer took for his method of valuation reproduction cost new less present depreciation of Plaintiff's property as of December 31, 1915, and added thereto the actual gross investment made between that date and December 31, 1920, after deducting estimated depreciation resulting during that period, (P. R. 1291). The report further shows that in accordance with the instruction of the Commission, the engineer used unit prices of labor and material, which he terms "normal" or "pre-war," being those unit prices which prevailed about the year 1915, (P. R. 1292). The Engineer placed no value upon the intangible elements of value of Plaintiff's property, and his report does not include any value for such of the items valued and included by Alvord and Burdick, which the engineer for the Commission terms "intangible" or "hypothetical" (P. R. 1293). The Engineer of the Commission reported that the value of the physical property of the Plaintiff determined by the above method was Three Hundred and Ninety-seven Thousand Nine Hundred and Sixty-four Dollars and Thirty-eight Cents ($397,964.38), (P. R. 1296). W. Q. Gallaher stated in his examination that he used pre-war prices upon the suggestion of the Commission, and that he did not estimate the value of the property of the Plaintiff, taking into consid-

eration values existing at the time he made his report, (P. R. 1325), and that the value placed by him does not represent what it would have cost to reproduce the plant at the time the report was made (P. R. 1326), and that it would have cost twice as much to reproduce the plant as of December 31, 1920, than as of December 31, 1914, (P. R. 1326).

Opinion of The Commission.

The opinion of the Commission and the order fixing the value of the property of the Plaintiff in case No. 1138 is found on Pages 1358 to 1373 of the Printed Record. Upon the evidence and pleadings above enumerated the Commission found that since January 1, 1916, Plaintiff had made additions and betterments to its plant and property of the value of Ninety-two Thousand Five Hundred and Twenty Dollars ($92,250.00), consisting of the Bluefield Valley Water Works Company which the Commission values at Twenty-five Thousand Dollars ($25,000.-00), and other additions and improvements between December 31, 1915, and December 31, 1920, amounting to Sixty-seven Thousand Five Hundred and Twenty Dollars and Fifty-three Cents ($67,520.53). (P. R. 1360.) The Commission further sets out in its opinion that it directed its engineer to make an inventory and appraisal of Plaintiff's property upon the following basis: "For all plant constructed prior to December 31, 1915, on the basis of reproduction new less depreciation, at prices prevailing during the year 1915, to which should be added for all plant constructed since December 31, 1915, gross investment cost less estimated accured depre-

ciation." (P. R. 1361). The Commission disregarded the evidence of Howson as to value and adopted the method shown by Gallaher's report, added thereto the value of the plant of the Bluefield Valley Water Works Co. going value and working capital and determined the fair value of the Plaintiff's property to be Four Hundred and Sixty Thousand ($460,000.00), which the Commission fixed as the value of the Plaintiff's property for rate making purposes (P. R. 1365). An order was entered by the Commission in accordance with the conclusion reached in its opinion above referred to, (P. R. 1371-72).

PROCEEDINGS IN THE COURT BELOW ON FINAL HEARING.

On the 30th day of September, 1921, the Plaintiff filed its petition before the Supreme Court of Appeals of West Virginia for a suspension of the order of the Commission entered on the 7th day of September, 1921. (P. R. 2-5). The petition alleges that the sum of Four Hundred and Sixty Thousand Dollars ($460,000.00), fixed by the Commission as the value of the property of the Plaintiff, does not represent the present actual value of the plant and property of Plaintiff, used and useful in the service of the public and that rates fixed by the Commission based upon the said valuation will not produce a fair and adequate return upon the present value of the Plaintiff's plant and property used and useful in the service of the public.

Plaintiff makes ten assignments of error in the

said petition, No. 9 of which is as follows:

> "Because the Commission by its holding and its said order refused to allow your petitioner a fair and just return upon the value of its plant used and useful in the service of the public, and by its order deprives your petitioner of just compensation and the rates fixed by said Commission in its order are confiscatory and repugnant to Cluase 1 of the Fourteenth Amendment of the Constitution of the United States in that the said order deprives your petitioner of its property without due process of law and without just compensation therefor, and denies to your petioner the equal protection of the law." (P. R. 4-5.)

The Supreme Court of Appeals of West Virginia dismissed the petition of the Plaintiff for the reasons set out in the opinion of the said court entered on the 14th day of December, 1921, which opinion and order are found on pages 1373-1380 of the Printed Record. An analysis of the opinion shows that the Supreme Court of Appeals of West Virginia has adopted past cost less depreciation as the principal and only element to be considered in establishing the value of a public service utility, which judgment of the Supreme Court of Appeals of West Virginia is now before this honorable court upon a writ of error allowed on the 18th day of January, 1922, by the Chief Justice of this honorable court.

The City of Bluefield, one of the defendants herein is a city of about Twenty Thousand (20,000) inhabitants, located on the Norfolk & Western Railroad, in the southern part of West Virginia. The location of the City is peculiar from the standpoint

of water supply in that it is situated upon the highest point on the Norfolk & Western Railroad and that to the east and west there is a rapid decrease in elevation. The cost of supplying water to the inhabitants of Bluefield is naturally increased by reason of the elevation. With the exception of the water supplied from the gravity springs, which flows into the City by gravity, it is necessary to pump or lift the water into the City from points of far less elevation. The situation from a standpoint of water supply is also peculiar in that the Plaintiff has utilized all of the supply immediately available, and to increase the supply it will be necessary for the Plaintiff to go a long distance and to a place of less elevation than the present supply. The history of the Plaintiff begins with the history of the City of Bluefield, and the plant has been constructed and increased as the population of the City increased. The population of Bluefield in 1890 was 1,775; in 1900 it was 4,644; in 1910 it was 11,188 and is now between 18,000 and 20,000. (P. R. 14-15).

The plant of the Plaintiff has been increased by money derived from the sale of real estate and such profits as were available to put back into the extension of the plant. We find from the report of the statistician of the Commission, (P. R. 1317), that the investment in the properties of the Plaintiff as of December 31, 1920, after deducting depreciation is Three Hundred and Sixty-five Thousand Dollars ($365,000.00). The gross investment, as shown by the statistician's report, in the plant and property since its organization amounts to Four Hundred and Eighty-nine Thousand Dollars ($489,000.00). The

investigation of past cost made by Alvord and Burdick shows that the actual cash outlay expended for the construction of the plant from its inception to January 1, 1916, is Four Hundred and Fifteen Thousand Seven Hundred and Four Dollars ($415,704.00) (P. R. 551).

The record further shows that the Plaintiff has not at any time or during any period from its organization to the present time earned a return of six per cent. upon the value of its plant and property, and the record further shows that since 1916, Plaintiff has not been permitted to earn a return of six per cent. even upon the low value of Three Hundred and Sixty Thousand Dollars ($360,000.00), fixed by the commission.

II

SPECIFICATION OF ERRORS RELIED UPON SETTING OUT SEPARATELY AND PARTICULARLY EACH ERROR ASSERTED AND INTENDED TO BE URGED.

I.

The Supreme Court of Appeals of the State of West Virginia erred in refusing to suspend the order of the Public Service Commission of West Virginia dated September 7th, 1921, and in affirming the said order, for the reasons following:

1. The Public Service Commission of West Virginia, by its said order, refused to allow to plaintiff a fair and just return upon the present fair value

of its plant and property used and useful in the service of the public, and the said order deprives plaintiff of just compensation and deprives plaintiff of its property without due process of law and without just compensation therefor and denies to plaintiff the equal protection of the law, and the said order of the Public Service Commission is confiscatory and is in conflict with and repugnant of the Fourteenth Amendment of the Constitution of the United States.

2. The Public Service Commission of West Virginia, in its said order, placed a value of $460,000.00 upon the plant and properties of plaintiff, used and useful in the service of the public, as a valuation and basis upon which to predicate its findings for fixing a fair rate to this plaintiff for its services rendered the public and disregarded the reports and testimony of witnesses as to the present actual fair value of the plant and property of the plaintiff.

3. The Public Service Commission of West Virginia disregarded the evidence of witnesses as to the present fair value of the plant and property of plaintiff and failed and refused to fix the value of the plant and property of plaintiff at the sum of $900,000.00, which sum is supported by the evidence of all of the witnesses testifying before the said Commission, and arbitrarily fixed the value of the plant and properties of plaintiff at the sum of $460,000.00.

4. The Public Service Commission of West Virginia took past cost less depreciation as the basis of determining the value of the plant and property

of plaintiff prior to the year 1915 and added to the value thus found the actual cost of additions since that date, deducting therefrom estimated depreciation.

5. The Commission disregarded and refused to consider the evidence as to the present value of the plant and property of plaintiff determined in accordance with present day and existing prices and disregarded the testimony of the witnesses as to the value of the plant and property of plaintiff calculated upon said basis and based all of its calculations as to present value upon past or pre-war cost.

6. The Commission took average prices existing from the years 1910 to 1915 as a basis for determining present value of the plant and properties of plaintiff and refused to take prices existing in 1920 as a basis for determining the present value of plaintiff's plant and property.

7. The Commission refused to allow plaintiff a fair and adequate sum for the value of its springs and water rights, which value was placed by the witnesses at the sum of $50,000.00, and limited the value of the springs and water rights belonging to plaintiff to the actual value of the land on which such springs are located.

8. The Commission refused to allow plaintiff a fair and adequate sum, in the valuation of its plant, for overhead expense, operating capital, cutting through pavement to lay mains, and other items set out in the valuation of the plant by the witness for plaintiff.

9. The Commission refused to consider the present value of the plant and properties of the plaintiff determined by the reproduction new less depreciation theory of valuation.

10. The Commission held that plainiff is entitled to receive a return of only eight per cent. upon the value determined by the Commission, as aforesaid, as the actual present value of the plant of plaintiff, which said return of eight per cent. includes an allowance of two per cent. for annual depreciation, making the net return to plaintiff only six per cent. upon the set value of the plant and property of plaintiff. And the Commission refused to increase the rate of return to plaintiff to correspond with the shown increase in interest rates and returns upon other investments.

II.

The Supreme Court of Appeals of the State of West Virginia erred in holding that investment less depreciation or past cost less depreciation is the true basis for determining value of a public utility for rate making purposes.

III.

The Supreme Court of Appeals of the State of West Virginia erred in holding that the true basis for rate making purposes of a public utility is the actual fair value of its investment at the time used and useful in the business of furnishing service to the public.

IV.

The Supreme Court of Appeals of the State of West Virginia erred in holding that the original cost

of a public utility in connection with its history and growth and the value of the service rendered, constitute the principal elements to be considered in connection with rate making for the service of the public.

V.

The Supreme Court of Appeals of the State of West Virginia erred in refusing to consider the value of the plant and properties of plaintiff as determined by the reproduction new less depreciation theory of valuation and in holding that the reproduction new less depreciation theory of valuation, is an unfair method of valuation.

VI.

The Supreme Court of Appeals of the State of West Virginia erred in holding that the value of the springs which form a large part of the water supply of plaintiff is limited to the actual amount invested in the land whereon said springs are located, and in refusing to allow to plaintiff the sum of $50,000.00 as the value of said springs and water rights.

VII.

The Supreme Court of Appeals of the State of West Virginia erred in holding that the order of the Public Service Commission of West Virginia fixing the value of the plant of plaintiff, used and useful in the service of the public, at the sum of $460,000.00, and refusing to plaintiff an adequate sum for its springs and water rights, overhead expenses, operating capital, cutting through pavement to lay mains, and other items, set out in the evidence and

reports of the witnesses, was not confiscatory and in violation of the first section of the Fourteenth Amendment of the Federal Constitution and the Court erred in holding that the said order of the Public Service Commission does not deprive plaintiff of its property without due process of law and does not deny to plaintiff equal protection of the law in violation of the provisions of the Federal Constitution.

VIII.

The Supreme Court of Appeals of the State of West Virginia errs in holding that the provisions of section 16, chapter 15-O of the Code of West Virginia, 1918, which said section gives to any public service corporation aggrieved by an order of the said Commission the right to petition the Supreme Court of Appeals of West Virginia for a suspension of the said order and a hearing upon said petition before the said Court and a decision, by the said Court, in the matter in controversy, as may seem to said Court to be just and right, limits plaintiff to the right to have the orders of the said Commission reviewed only when such findings and order of the Commission are not based upon evidence, and that under said section plaintiff is not entitled to a judicial review of the findings of said Commission.

IX.

The Supreme Court of Appeals of the State of West Virginia errs in holding that the valuation of the property of a public service corporation and prescribing rates for tolls and charges for services to

be rendered are purely legislative acts, not subject to judicial review, except in so far and in so far only as may be necessary to determine whether such rates are void on constitutional or other grounds.

X.

Section 16, chapter 15-O of the Code of West Virginia, as construed by the Supreme Court of Appeals of West Virginia, withholds from the Court the power to determine the question of confiscation according to its own independent judgment when the action of the Commission, in fixing the value of a utility's property for rate making purposes, comes before the said Court to be considered on appeal, and the said chapter and section of the Code of West Virginia, as construed by the Supreme Court of Appeals of West Virginia, must be deemed to deny plaintiff due process of law, there being no other remedy or method of review provided by Statute which affords to plaintiff a judicial review of the findings of the said Commission.

XI.

Section 16, chapter 15-O of the Code of West Virginia, as construed by the Supreme Court of Appeals of West Virginia, deprives plaintiff of due process of law and denies to it equal protection of the law and is in conflict with and repugnant to the Fourteenth Amendment of the Federal Constitution.

XII.

The judgment of the Supreme Court of Appeals of the State of West Virginia entered herein

is repugnant to and in conflict with the Fourteenth Amendment of the Constitution of the United States.

XIII.

In the proceedings below the authority exercised under a State was drawn in question on the ground that the authority so exercised was repugnant to the Constitution of the United States and the validity of the sixteenth section of chapter 15-O of the Code of West Virginia was also drawn in question and the decision of the Supreme Court of Appeals of West Virginia was in favor of the validity of the authority exercised by the State and hence the writ of error in this case was properly awarded.

III

BRIEF OF THE ARGUMENT.

I.

The Writ of Error Was Properly Awarded.

For the reason that the authority exercised under a State was drawn in question on the ground that it was repugnant to the Constitution of the United States and the validity of the sixteenth section of chapter 15-O of the Code of West Virginia, 1918, was also drawn in question on the ground that it was repugnant to the Constitution of the United States and the decision of the Supreme Court of

Appeals of West Virginia was in favor of the validity of the authority so exercised and of the statute so questioned.

Ohio Valley Water Company vs. Ben Avon Borough, 64 L. Ed. 908.

Ireland vs. Woods, 246 U. S. 323.

Stadelman vs. Miner 246 U. S. 544.

Citizens Bank vs. Apperman, 249 U. S. 448.

Kennedy vs. Supreme Lodge, 222 U. S. 411.

Kansas City Southern Railroad Co. vs. Road Improvement District, 256 U. S. 658.

Merchants National Bank vs. Richmond, 256 U. S. 635.

II

Section 16, Chapter 15-O of the Code of West Virginia, as construed by the Supreme Court of Appeals of West Virginia, deprives plaintiff of due process of law in that it withholds from the Court power to determine the question of confiscation according to its own independent judgment when the act of the Public Service Commission of West Virginia, in fixing the value of a public utility's property for rate making purposes, comes to be considered on appeal, there being no other method, under the State law, which affords adequate opportunity for testing judicially an order of the Commission alleged to be confiscatory.

The Supreme Court of Appeals of West Virginia considered that the appeal prosecuted by the plaintiff from the act of the Commission presented a mere legislative or administrative question (although the question of confiscation was involved). This is shown to a demonstration by the decision of

the Court herein, part of which is hereinafter cited and any quotations from other decisions of the Supreme Court of Appeals of West Virginia. The Supreme Court of Appeals, in its final decision in this case, says:

> "From the written opinion of the Commission we find that it ascertained the value of petitioner's property for rate making purposes 'after maturely and carefully considering the various methods presented for the ascertainment of fair value and giving such weight as seems proper to every element involved and all the facts and circumstances disclosed by the record.'" p. r. page 1376.

An analysis of the entire opinion leads to the conclusion that the Supreme Court of Appeals of West Virginia, under the interpretation given by it to the statute above mentioned, did not, in this case, determine the question of confiscation according to its own independent judgment and adopted the finding of the Commission as to value without an independent investigation of the evidence and facts upon which the opinion of the Commission was based. The statute in question is set out in full on page 5 of this brief. The Supreme Court of Appeals, in construing this statute, has said:

> "This court by section 16, chapter 9, Acts 1913, is given jurisdiction not by appeal, but as upon original process to review an order of the Public Service Commission created by said act, and such jurisdiction is limited to matters purely judical and does not extend to matters purely administrative, executive or legislative, such jurisdiction not being conferred by the Constitution."
>
> United Fuel Gas Company vs. Public Service Commission, 73 W. Va. 571.

In the former opinion rendered by the Supreme Court of Appeals of West Virginia in this case the Cuort says:

> "The valuation of the property of a public service corporation and prescribing rates for tolls and charges for services to be rendered, are purely legislative acts, not subject to judical review except in so far and in so far only as may be necessary to determine whether such rates are void on constitutional or other grounds." (p. r. 1104.)

The Court, in numerous decisions, has laid down the doctrine that:

> "Findings of fact by the Public Service Commission, based upon evidence to support them, will not be reviewed by this Court."
>
> Railroad Company vs. Public Service Commission, 82 W. Va. 408.
>
> City of Charleston vs. Public Service Commission, 86 W. Va. 536.
>
> Coal & Coke Company vs. Public Service Commission, 84 W. Va. 678.

> "Without doubt the duties of the courts upon appeals under the act are judicial in character,—not legislative, as in Prentis v. Atlantic Coast Line R. Co. supra. This is not disputed; but their jurisdiction, as ruled by the supreme court, stopped short of what must be plainly intrusted to some court in order that there may be due process of law.
>
> "Plaintiff in error has not had proper opportunity for an adequate judicial hearing as to confiscation; and unless such an opportunity is now available, and can be definitely indicated by the court below in the exercise of its power finally to construe

laws of the state (including, of course, sec. 31), the challenged order is invalid."

Ohio Valley Water Works Co. vs. Ben Avon Borough, 64 L. Ed. 908.

The order here involved prescribes a valuation of plaintiff's plant and a complete schedule of maximum future rates and is legislative in character. In all such cases, if the owner claims confiscation of his property will result, the state must provide a fair opportunity for submitting that issue to a judicial tribunal for determination upon its own independent judgment as to both law and facts; otherwise, the order is void because in conflict with the due process clause, Fourtheenth Amendment.

This Court is bound by the construction of the statute given it by the highest Court of the State, as is said in Quong Ham Wah Company vs. Industrial Association, 255 U. S. 445:

"Construction of a State statute by the highest Court of that State must be accepted by the Federal Supreme Court when testing the validity of the statute on a writ of error to the State Court."

III.

Plaintiff is entitled to receive a fair return upon the reasonable value of its property at the time it is being used for the public and the value of its property, used and useful in the service of the public, is to be determined as of the time the inquiry is made regarding the rates.

"What the company is entitled to demand, in order that it may have just compensation, is a fair

return upon the **reasonable value of the property at the time it is being used for the public.**" (Italics ours.)

San Deigo, etc. Company vs. City of National City, 174 U. S. 739.

"And we concur with the Court below in holding that the value of the property is to be **determined as of the time when the inquiry is made regarding the rates.**" (Italics ours.)

Wilcox vs. Consolidated Gas Co., 212 U. S. 19, p. 52.

IV.

The rule of present reproduction cost less depreciation has been approved by the Supreme Court of the United States and numerous State and Federal Courts.

The rule of the present reproduction cost has been either expressly or implicitly recognized in all the cases in which this Court has passed on these matters.

Wilcox vs. Consolidated Gas Co., 212 U. S. 19.

Des Moines Gas Company vs. Des Moines, 238 U. S. 153.

Knoxville vs. Knoxville Water Co., 212 U. S. 1.

The Minnesota Rate Cases, 230 U. S. 352.

San Deigo etc. Company vs. National City, 174 U. S. 739.

San Deigo etc. Company vs. Jasper, 189 U. S. 439.

"It is true that this application has not distinctly arisen since the present rise of prices, but it is

not possible that it should have general application and yet not cover this, its most glaring illustration."

Consolidated Gas Company vs. Newton, 267 Federal, 231.

V.

There is fundamental error in taking the pre-war unit of prices as practically the sole basis for ascertaining the reproduction value of the plant and property belonging to the plaintiff for rate making purposes and a valuation of the plant and property of plaintiff for rate making purposes, based on unit prices existing in the year 1915, deprives plaintiff of its property without due process of law and takes the property of the plaintiff, for public use, without making just compensation therefor, in violation of and contrary to the provisions of the Fourteenth Amendment to the Federal Constitution.

St. Joseph Railway, Light, Heat & Power Company vs. Public Service Commission, 268 Fed. 269.

Potomac Electric Power Company, et al., vs. The Public Utilities Commission of District of Columbia, 276 Fed. 327.

Elizabethtown Gas & Light Co. vs. Board of Public Utilities Commissioners, (New Jersey) 111 Atlantic 729.

Joplin & Pittsburgh Railroad Co. vs. Public Service Commission, 267 Federal 584.

Petersburg Gas Company vs. City of Petersburg (Va.) 110 S. E. 533.

The record shows conclusively that the Public Service Commission of West Virginia based its finding as to the value of the plant and property of the

plaintiff upon unit prices existing in the year 1915 as to such part of the plant and property as existed January 1st, 1916, and added to the value thus found the cost of additions and extensions made since that date, less estimated depreciation. The Commission directed its Engineer, W. Q. Gallaher, to make an inventory and appraisal of plaintiff's property upon the following basis:

> "For all plant constructed prior to December 31, 1915, on the basis of reproduction new less depreciation at prices prevailing during the year 1915, to which should be added for all plant constructed since December 31, 1915, gross investment cost less estimated accrued depreciation."
>
> Opinion of Commission, p. r. 1361.

That Gallaher used this method in making his report is shown by the introduction to the appraisal and inventory filed by him as part of the record in this case:

> "As per your (The Public Service Commission) suggestion the following method was used in determining a fair value for rate making:
>
> "To the reproduction cost new less present depreciation of the applicant's property as of December 31, 1915, was added the actual gross investments made between that date and December 31, 1920, after deducting therefrom the estimated depreciation resulting during that period." p. r. 1921.

The Commission disregarded all evidence as to present value shown by the testimony of L. R. Howson and W. Q. Gallaher, and adopted the method of determining value shown by Gallaher's report.

> "To adopt the method shown by Gallaher's report and adding to the value so found the value

of the plant of Bluefield Valley Water Works Company and for going value and working capital, the present fair value of applicant's property is approximately $460,000.

"After maturely and carefully considering the various methods presented for the ascertainment of fair value and giving such weight as seems proper to every element involved and all the facts and circumstances disclosed by the record, we are of opinion to and do fix the present fair value of the property of the Bluefield Water Works and Development Company, used and useful in its public service business, as of December 31, 1920, at $460,000.00."

Opinion of Commission, p. r. 1365.

We have found no case from this Honorable Court involving rate making as effected by the inflated prices of the war period and subsequent years but we have quoted above several cases involving a variation of prices from other causes. San Deigo etc. Company vs. City of National City and Wilcox vs. Consolidated Gas Company, supra. As is said by Judge Burks in Petersburg Gas Company vs. City of Petersburg, 110 S. E. page 538:

"Three years have elapsed since the close of the war, and neither labor nor materials have declined to anything like prewar prices. When, if ever, they will, no one can foretell. It would seem that time enough had elapsed to furnish a basis for calculating reproduction costs. In Consolidated Gas Co. v. Newton (Southern Dist. New York) 267 Fed. 231, 236, Judge Hand said that, so far as he had found in the books, a test of two years was enough, and cited Minnesota Rate Cases, 230 U. S. 352, 33 Sup. Ct. 729, 57 L. Ed. 1511, 48 L. R. A. (N. S.) 1151, Ann. Cas. 1916A, 18, and Municipal

Gas Co. v. Public Service Commission, 225 N. Y. 89, 121 N. E. 772. On the same subject he further said:

"'The master has taken complete evidence over a period of 20 months, from January 1, 1918, to August 31, 1919. Since that time 11 more months have passed, during which there has been no fall in price levels. The record has some evidence of this down to a later day, but of course, not down to the date of this opinion. But evidence is not necessary in the face of so patent and obtrusive a fact of daily life, and it is quite fair to say that the condition which the master found as of August 31, 1919, has been aggravated during the succeeding year. The period, despite its unusual character, I find to be a sufficient basis for the calculation of the cost of production and the 'rate base' for a future time long enough to call for some judicial action.'"

All of the cases from Federal and State Courts which we have found, with the exception of the cases from the Supreme Court of Appeals of West Virginia, support the proposition that there is fundamental error in restricting investigation of value to prices existing during a period antedating the time when the investigation of the value is made. The Courts almost unanimously declare that it is fundamental error to take pre-war unit prices as the controlling basis for ascertaining reproduction value. In St. Joseph etc. Company vs. Public Service Commission of Missouri, 268 Federal 267, it is said:

"'The Commission took the original cost when obtainable, and, when not obtainable, average prices for a fixed period of five years before war prices prevailed, going back approximately to the year 1910.***' It is my judgment that the great weight

of authority is against the adoption of a standard of original cost as a controlling basis for determining present value. **The present fair value is the object to be attained. Nor do I think it permissible substantially to restrict the inquiry to a period antedating present cost prices."** (Italics supplied.)

In Elizabethtown Gas Co. v. Public Utility Com'rs. (N. J. Sup.) 111 Atl. 729, the Commission adopted as a standard of value the average prices prevailing for five years preceding January 1, 1916. Swayze, J., speaking for the Supreme Court of New Jersey, said:

" 'I think it entirely clear that the failure to allow for prices at the time to which the rates apply, July 1, 1919, was an error. It is not denied that prices were very much higher in 1919, and are very much higher now, than the average for the years 1911 to 1916. So notorious is this that the Supreme Court of the United States has referred to it in an opinion as a matter of common knowledge. Lincoln Gas Co. v. Lincoln, 250 U. S. 256, at page 268, 39 Sup. Ct. 454, 63 L. Ed. 968. In that case, on its own responsibility, the court suggested that in its opinion the decree ought to be modified to permit the complainant to make another application to the courts for relief. It would be manifestly unjust to apply to a gas company a standard of value different from that applied to others. To what extent the increase in prices may be due to an inflation of the currency or to any other particular cause we do not know. What we do know is that the dollar of 1919 and the dollar of 1920 is worth less than the dollar of 1916, and still less compared with the dollar of the average year from 1911 to 1916. If it were proposed to value the property of the gas company in 100-cent dollars and allow them

a return only on that while other values were on the basis of 50-cent dollars and just double in number, every one would see the injustice; so far as the increase in prices is due to inflation of the currency, the illustration is a perfect one.' "

In the case of Joplin & Pittsburgh Railroad Company vs. Public Service Commission, 276 Fed. 587, the Court says:

"But it may be pointed out that it appears upon the face of the report that great, if not undue, emphasis was laid upon the original cost of the property*** at a period greatly antedating that with which this investigation must deal; nor can we say that the present period of high prices is so temporary or abnormal that it may practically be disregarded in arriving at the value of complainant's properties. No one can say what degree of depression may ultimately come, but it is reasonably certain that the cost of the properties now under consideration will never again approximate figures prevailing in the years before the World War."

The facts presented by the record in the case of Potomac Electric Power Company, et al., vs. Public Utilities Commission of District of Columbia, 276 Fed. 327, decided November 7, 1921, are very similiar to those presented by the record in the instant case. Judge Robb, in writing the opinion of the Court of Appeals of the District of Columbia, reversing the action of the trial Court in sustaining a finding of value by the Commission based on the fair value of plaintiff's property as of July 1st, 1914, says:

"The Commission found the fair value of the property as of July 1st, 1914, to be $10,250,000.00.

The uncontradicted evidence showed that between that date and December 31, 1916, 'the time of said valuation' there had been a sharp rise in values." **********"Appellants contend that the Commission, as a matter of law in reaching a conclusion as to the fair value of their property on December 31, 1916, should have taken into consideration the increased vlaue of that property, as shown by the evidence between the earlier and later dates. This the Commission declined to do, but taking for a basis the fair value of the property as of July 1st, 1914, the Commission added the net additional expenditures on the property subsequent to that date and entirely ignored the evidence as to the increase in the value of the property forming the basis of the valuation of July 1st, 1914."**********"The trial Court was of the view that the rule adopted by the Commission was correct. We are unable to concur in that view.

"We are of the opinion, therefore, that the present cost of reproduction is one of the necessary elements for consideration along with other relevant facts in fixing the fair and reasonable value of the property."

The most recent case which we have found from any of the State Courts is the case of Petersburg Gas Company vs. City of Petersburg, from the Supreme Court of Appeals of Virginia, reported in 110 S. E. pages 533-541. The facts in this case are identical with the facts presented by the record in the case now under discussion. The able and exhaustive opinion of Judge Burks is applicable to the present case and the action of the Public Service Commission in determining value upon a basis of pre-war unit prices is disapproved by the Supreme

Court of Appeals of Virginia for the reason that such method of valuation is unfair to the utility and is, in effect, a taking of private property for public use without just compensation. The Court is respectfully referred to this opinion which might aptly be quoted in its entirety in this brief.

VI.

The Sum of Four Hundred and Sixty Thousand Dollars ($460,000.00), set by the Commission as the Fair Value of Plaintiff's property does not represent the present value and the evidence of all the witnesses testifying places the value of plaintiff's property at a sum greatly in excess of the value fixed by the Commission.

W. E. Miller fixes the value of Plaintiff's property as of January 1, 1915, at the sum of Three Hundred Ninety-two Thousand Dollars ($392,000.00) (p. r. 1095 and 1360). John W. Alvord, a witness of wide experience and known ability, (p. r. 21), places the value of Plaintiff's property as of January 1, 1915, at the sum of Five Hundred Forty Thousand Dollars ($540,000.000) (p. r. 24 and 1360). These values were determined on unit prices existing over a five year period from 1910 to 1915. The Commission disregarded the evidence of both these witnesses and arbitrarily placed the value of Plaintiff's plant and property at the sum of Three Hundred Sixty Thousand Dollars, ($360,000.00), (p. r. 1096). Additions and extensions made to the plant since 1915, including Bluefield Valley Water Works Company valued at Twenty-

five Thousand Dollars ($25,000.00), amount to Ninety-two Thousand Five Hundred and Twenty Dollars ($92,520.00), from which must be deducted estimated depreciation, leaving Eighty-eight Thousand Nine Hundred and Five Dollars ($88,905.00) as present worth of additions. Howson testifies that the reproduction cost in 1920 is almost twice the reproduction cost in 1915. (p. r. 1225). Gallaher says that in 1920 it would "cost twice as much, pretty close to it" to reproduce the plant than in 1915. (p. r. 1326). The evidence of these two witnesses on this question is uncontradicted, and must be taken as true, hence the present value of Plaintiff's property must be at least twice Three Hundred Sixty Thousand Dollars ($360,000.00) the amount found by the Commission in its order of April 24, 1917, Seven Hundred Twenty Thousand Dollars ($720,000 00), plus the additions since that time, Eighty-eight Thousand Nine Hundred and Five Dollars ($88,905.00), making a total present value of Eight Hundred Eight Thousand Nine Hundred and Five Dollars ($808,905.00). But the record shows that the sum of Three Hundred Sixty Thousand Dollars ($360,000.00) was less than the amount set by any witness as the value of Plaintiff's property in 1915. Taking twice the value found by Miller and adding thereto the cost of additions and extensions, we find the present value to be Eight Hundred and Seventy-six Thousand Five Hundred and Twenty Dollars ($876,520.00.) Twice Alvord's value of 1915, plus additions gives present value One Million One Hundred Seventy-two Thousand Five Hundred and Twenty Dollars, ($1,172,520.00). The uncontro-

verted and uncontradicted evidence establishes the present value of Plaintiff's property to be at least twice the amount fixed by the Commission in its final order in this case, and a fair minded board, under the evidence could not have arrived at the value of Four Hundred Sixty Thousand Dollars ($460,000.00) as the present value of Plaintiff's property.

Howson places present value at 1920 prices at One Million One Hundred Ninety-four Thousand Six Hundred and Sixty-Three Dollars ($1,194,663.00.) Gallaher finds that one-half of present value of the physical plant, not including additions, is Three Hundred Thirty-four Thousand Fifty-nine Dollars, ($334,059.00), giving a present value of Six Hundred Sixty-eight Thousand One Hundred and Eighteen Dollars ($668,118.00), to which must be added Eighty-eight Thousand Nine Hundred and Five Dollars ($88,905.00) for additions and at least Eighty-five Thousand Dollars ($85,000.00) for going value and working capital, giving Gallaher's estimate of present value Eight Hundred Forty-Two Thousand Twenty-Three Dollars ($842,023.00), which includes nothing for water rights.

In the light of the decisions of the court herein quoted, Plaintiff is entitled to a valuation of at least One Million Dollars ($1,000,000.00), under the evidence and the fact that the Commission arbitrarily fixed the sum of Four Hundred Sixty Thousand Dollars ($460,000.00) shows that the past cost and not present value was the object of the Commission's investigation. Plaintiff did not contend for a valuation of One Million One Hundred Ninety-four Thousand Six Hundred Sixty-three Dollars ($1,194,-

663.00), but asked that the valuation be fixed at the sum of Nine Hundred Thousand Dollars ($900,000.00), which the witness Howson fixed as a fair valuation as of January 1, 1920. This valuation is based upon the well reasoned theory that prices will not remain permanent at the high level of 1920, but that there will be a decline in prices, and that they will eventually become permanently fixed about midway between the price levels of 1915 and 1920. (p. r. 1226.)

VII.

A public utility is entitled to a return upon the fair value of all of the component elements of its plant and property as of the time an application is made for an increase in rates and an order of a public service commission refusing to allow a public utility a return upon its water rights and springs over and above the value of the land on which the said springs are located is an unfair valuation, especially in the light of uncontradicted evidence that the value of the springs and water rights is Fifty Thousand Dollars ($50,000.00) over and above the value of the land on which the said springs are located.

The Public Service Commission of West Virginia refused to include in its estimate of value any value for the springs and water rights over and above the value of the land on which said springs are located. The question of value of water rights and springs of a utility has never been presented to this court. The question was mooted, but not de-

cided by the court in Denver v. Denver Union Water Co. 246 U. S. 178, 62 L. Ed. 649, for the reason that the exigences of that case did not require that the question be passed upon. The question is fairly presented by the record in this case, and the failure of the Commission to allow Plaintiff a fair value for its springs and water rights is covered by Assignment of Error No. 1, 7 and No. VI. The evidence established the value of these springs and water rights at the sum of Fifty Thousand Dollars ($50,000.00. Forty Thousand Dollars $(40,000.00) of which value is for the gravity springs which deliver water to the storage tanks of Plaintiff by force of gravity. A full and well reasoned discussion of the special value of these springs, over and above the land on which they are located, is contained in a report filed by John W. Alvord as part of his evidence, (p. r. 541-550.) After showing that the springs do have a special and peculiar value the witness arrives at their value by a comparative estimate of the cost of supplying water from the present source and next available source of supply during the estimated life of the springs. The peculiar topographical location of Bluefield gives the present source of supply a peculiar value in that the expense of lifting water to the city from the next available source will add a large amount annually to the operating costs of Plaintiff. The Supreme Court of Appeals, in affirming the finding of the Commission on this item of value said:

> "In estimating the value of the property and capital employed by a water company in the public service, the value of the springs on lands purchased as a source of water supply, in proximity to the

municipality served, as a general rule, is properly limited to the actual amount invested by the utility therein, particularly so when there are other sources of supply that may be obtained, as a river or other natural water course, and the municipality must be deemed to have been located with reference to such natural sources of water supply employed by the company."

Opinion of Court p. r. 1375.

This statement of the court is not sustained by the record. There is no evidence to the effect that "there are other sources of supply that may be obtained, as a river or other natural water course." The evidence shows that the next available source of supply is a distance of four or five miles from the storage tanks of Plaintiff and the record further shows that an additional supply from any source will cost Plaintiff from Three Hundred Thousand Dollars ($300,000.00) to Four Hundred Thousand Dollars ($400,000.00.) We submit that the failure of the Commission to allow value for these springs and water rights constitutes a taking of Plaintiff's property for the public use without compensation, in violation of the Constitutional provisions, and constitutes reversible error.

VIII.

A return of only eight per cent. upon the value of a public utility engaged in supplying water to a municipality, and the citizens thereof, is not an adequate return to the utility for the service rendered.

Lincoln Gas & Electric Light Co. v. City of Lincoln, 250 U. S. 63 Law Edition, 968.

Elizabethtown Gas & Light Co. v. Public Utility

Commission. (N. J.) 111 Atl. 729.

Potomac Electric Power Co. (Dist. of Col.) P. U. R. 1917D, 563.

Passaic Rate Case (N. J.) 87 Atl. 651.

State Public Utilities Com. v. Springfield Gas & Electric Co., (Ill.) 125 N. E. 891.

Knoxville v. Knoxville Water Co., 212 U. S. 1.

Petersburg Gas Co. v. City of Petersburg (Va.) 110 S. E. 533.

In the case of Petersburg Gas Co. v. City of Petersburg, Supra, it is said:

"The subject of rate making should be approached by commissions and courts with a view to doing what is fair and just between the parties under all the circumstances of the particular case. That for which the utility company is entitled to "just compensation' is the use of its property appropriated to the public benefit, and the value of that use is founded upon the fair value of the property so used, and not upon the amount of stock it has issued or the debts it may owe. **The rate of return on such 'fair value' which the utility company should be allowed to receive should be fair and just to the company and such as will make its securities attractive to investors when the company is prudently and carefully operated."** (Italics ours).

110 S. E. (Va.) 535.

The court in this same case further says:

"In fixing a rate, therefore, which will be just and reasonable, it must be borne in mind that the utility shall be allowed to realize such a net income upon the value or amount of its investment as will, when prudently managed, render its securities at-

tractive to the investing public. Otherwise there will result inferior service to the public and ultimately bankruptcy of the utility, and disaster as well to the public as the utility."

A proper rate must be determined as of the time the return is to apply. This court, in the Lincoln Gas & Electric Light Company case has taken judicial notice of the increase in the cost of labor and supplies of every kind and in the increase in annual returns of capital and enterprise the world over. A return of eight per cent. upon the value of a public utility, two per cent. of which must be set aside to cover depreciation, is not an adequate return in the light of universal increase in returns upon capital and enterprise. This court said in the case of Lincoln Gas & Electric Light Company v. City of Lincoln, supra:

"It is a matter of common knowledge that owing principally to the World War the cost of labor and supplies of every kind have greatly advanced since the Ordinance was adopted, and largely since this cause was heard in the Court below, and it is equally well known that annual returns upon capital and enterprise the world over have materially increased, so that what would have been a proper rate of return for capital invested in gas plants and similiar public utilities a few years ago furnishes no safe criterion for the present or for the future."

250 U. S. 63 Law Edition, 968.

In the case of Elizabethtown Gas & Light Company v. Public Utility Commission, supra, it is said:

"This suffices to show that the amount of return allowed to the companies would probably be

> insufficient under present circumstances **to attract capital to the business, and this was one of the important tests of the justice and reasonableness of the rate as decided in the Passaic Case."** (Italics supplied.)

The disastrous effect of failure to allow just and reasonable compensation to public service companies is well summed up by the Supreme Court of the United States in Knoxville v. Water Company, above referred to. In the case of Potomac Electric Power Company, P. U. R. 1917D, 563, it is said:

> "The return allowed should be one 'which will be fair to the investor, who has directed his energies and devoted his substance to the creation of this instrumentality, and fair and just likewise to the consumer, who under modern conditions is compelled to use the product of the utility in his daily business, social and domestic life.' "

The record in this case shows that the Public Service Commission has ordered Plaintiff to make large and expensive additions, improvements and extension to its plant, which are estimated by the various witnesses to cost from Two Hundred and Fifty Thousand Dollars ($250,000.00) to Five Hundred Thousand Dollars ($500,000.00). The amount necessary to make these improvements must be secured either from the sale of bonds, or be borrowed by the company. A **possible** return of six per cent. is not such an inducement as will enable plaintiff to secure funds with which to make necessary additions and extensions. This would be true as to any utility, but it is peculiarly true as of a regulated utility.

A return of six per cent to a utility which is

subject to the control and regulation of a State Public Service Commission is not an adequate return to the utility, not only for the season that the rate of return on invested capital has materially increased, and that such a return can be obtained on the safest and most conservative of investments, but for the further reason that a prudent man expects to receive at least six per cent. upon any investment made, and an investment in either stock or property is made with the anticipation that it will net a return of at least six per cent. and that the investor is offered a chance to secure a larger return upon his investment, due to a prospective increase in the value of stocks or bonds or property in which he invests his money. Six per cent. is the maximum that can be obtained from investment in the bonds of a regulated public utility, for so soon as the return made by the utility exceeds six per cent. the rates are reduced by the rate making body. It is true that the rate of interest allowed in the State of West Virginia is six per cent. but higher rates of interest are allowed by adjacent States, and no prudent man would invest his money in the bonds of a public utility, especially in light of the history of petitioner's plant which shows that the rate making body for over a period of five years has refused to allow petitioner a return of even six per cent. upon the low value fixed by the Commission.

IX.

The opinion and order of the Supreme Court of Appeals of West Virginia in refusing to suspend the order of the Public Service Commission of West

Virginia and in affirming the said order, deprives petitioner of its property without due process of law, and denies petitioner the equal protection of the law. The said opinion of the Supreme Court of Appeals of West Virginia is in conflict with the opinions of this Honorable Court and other Courts of last resort, and an examination of the opinion of the said Supreme Court of Appeals of West Virginia shows that the Court by the term "fair value of its investment" means "past cost less depreciation," and also discloses that the Court refuses to allow to petitioner any value for appreciation in value of its plant and properties and refused to consider increase in value due to increase in prices. The record further shows that no effort was made by the Court below to ascertain the present value of plaintiff's plant and property.

In conclusion we will respectfully submit that an examination of the entire record in this case shows that for a period of many years Plaintiff has been compelled to furnish service to the public at rates which did not provide an adequate return upon the value of the plant and property, used by Plaintiff in the service of the public. An examination of the final opinion of the Supreme Court of Appeals of West Virginia shows that the court has adopted investment less depreciation rather than present value as a basis for determining value of a public utility. The opinion further demonstrates that the court uses the words "investment," "fair value," and "original cost" synonymously. The word "investment," as used by the court in Syllabus No. 1 of its opinion, is unintelligible, and shows that the court below is

confused as to the terms "investment" and "property." No authorities have been found sustaining the proposition laid down by the court that original cost constitutes the principal element to be considered in connection with rate making for the service rendered to the public. The opinion of the court below also shows that the court is irrevocably opposed to a consideration of the reproduction new less depreciation theory of valuation, and that the court below considers a value arrived at by this method of valuation unfair to the public.

It is also submitted that the opinion and order of the Public Service Commission herein contains a serious and prejudicial misapprehension of the law of valuation as laid down by this court, and that no consideration was given to the real facts, as established by the evidence before the Commission, and that by reason thereof the plant and property of this Plaintiff is being taken for public use without just compensation and that plaintiff is denied the equal protection of the law in violation of and contrary to the provisions of the Federal Consitution. And it is respectfully submitted that the judgment of the Supreme Court of Appeals of West Virginia in this case should be reversed.

Respectfully submitted on behalf of the Bluefield Water Works & Improvement Company, Plaintiff in Error,

A. G. FOX
JOSEPH M. SANDERS
SANDERS, CROCKETT & FOX
Attorneys for Plaintiff in Error.

IN THE

Supreme Court of the United States

OCTOBER TERM, 1922.

No. 256

Bluefield Water Works & Improvement Company, Plaintiff in Error,

Vs.

Public Service Commission of the State of West Virginia and City of Bluefield, a Municipal Corporation, Defendants in Error.

REPLY BRIEF OF PLAINTIFF IN ERROR TO BRIEF FILED BY THE CITY OF BLUEFIELD IN SUPPORT OF ITS MOTION TO DISMISS THE WRIT OF ERROR GRANTED HEREIN.

STATEMENT.

A statement of the above case presenting the questions involved and the manner in which they were raised was made in the original brief on behalf of the Plaintiff in Error, filed herein. This statement is found on pages 1 to 14 of the said brief, and includes a statement of the nature of the case, a detailed statement of the proceedings before the Public Service Commission and in the court below,

the opinion of the Commission and the proceedings in the court below on the final hearing in this case. Reference is here made to the statement made in the original brief and the court is respectfully referred to that statement, which is here adopted, and the court is requested to consider the said statement in connection with the statement hereinafter made.

The statement made by Defendant in Error in its brief in support of the motion to dismiss the writ of error is in the main correct. The Plaintiff in Error admits that it is subject to the provisions of Chapter 15-O of Barnes' 1918 West Virginia Code, and that under the provisions of the said chapter, it is subject to the regulation and control of the Public Service Commission of West Virginia, under which chapter of the said Code the Public Service Commission of West Virginia is given full and complete authority to regulate and control public service utilities within the State of West Virginia, and to fix and establish rates to be charged by such public service utilities for the service rendered by them to the public. As is shown in the original statement, Plaintiff in Error made application to the said Public Service Commission for authority to increase its water rates, and the proceedings herein involved arose out of the said proceedings. Plaintiff in Error, both before the Public Service Commission of West Virginia, and in the Supreme Court of Appeals of West Virginia, claimed and asserted that the order of the Public Service Commission entered on the 7th day of September, 1921, fixing the value of Plaintiff's property for rate making purposes at the sum of $460,000.00 was not supported by the evidence and

was contrary to the evidence and that the said order of the Public Service Commission so fixing the value of the plant and property of the Plaintiff, used and useful in the service of the public, at the sum of $460,000.00 deprived Plaintiff of its property without due process of law, in violation of and contrary to the provisions of the Fourteenth Amendment of the Constitution of the United States, and that the said order took the property of the Plaintiff for the public use without just compensation, in violation of and contrary to the provisions of the Fourteenth Amendment of the Federal Constitution, and that by reason of the said order and the provisions of Chapter 15-O of Barnes' 1918 Code of West Virginia, as construed by the Supreme Court of Appeals, Plaintiff was denied due process of law and equal protection of the law, in violation of and contrary to the provisions of the Fourteenth Amendment of the Federal Constitution.

Chapter 15-O of Barnes' 1918 Code of West Virginia creates the Public Service Commission of the State of West Virginia, and defines its powers and duties. The jurisdiction of the Commission is set out in Section 3 of the said chapter of the said Code, which section is in part as follows:

> "The jurisdiction of the commission shall extend to and include: (a) common carriers, railroads, street railroads, express companies, sleeping car companies, freight lines, car companies, toll bridges, ferries, and steam and other boats engaged in the transportation of freight or passengers; and (b) telegraph and telephone companies and pipe line companies for the transportation of oil, gas or water; and (c) gas companies, electric lighting com-

panies and municipalities furnishing gas or electricity for lighting, heating or power purposes; and (d) hydro-electric companies for the generation and transmission of light, heat or power, and water companies, and municipalities furnishing water."

Section 5 of the said chapter is as follows:

"The commission is hereby given power to investigate all methods and practices of public service corporations or other persons subject to the provisions of this act; to require them to conform to the laws of this state and to all rules, regulations, and orders of the commission not contrary to law; and to require copies of all reports, rates, classifications, schedules and time tables in effect and used by such corporation or other person, to be filed with the commission, and all other information desired by the commission, relating to such investigation and requirements. The commission may compel obedience to its lawful orders by proceedings of mandamus or injunction or other proper proceedings in the name of the state in any circuit court having jurisdiction of the parties or of the subject matter, or the supreme court of appeals direct, and such proceedings shall have priority over all pending cases. The commission may change any intrastate rate, charge or toll which is unjust or unreasonable and may prescribe such rate, fare, charge or toll as would be just and reasonable, and change or prohibit any practice, device or method of service in order to prevent undue discrimination or favoritism as between persons, localities or classes of freight; provided that the commission shall not reduce any rate, toll or charge within ten years after the completion of the railroad or plant to be used in the public service below a point which would prevent such public service corporation, person, persons or firm from making a net earning of

eight per centum per annum on the cost of construction and equipment of said railroad or plant. But in no case shall the rate, toll or charge be more than the service is reasonably worth, considering the cost thereof. Every order entered by the commission shall continue in force until the expiration of the time, if any, named by the commission in such order, or until revoked or modified by the commission, unless the same be suspended, modified or revoked by order or decree of a court of competent jurisdiction."

Section 9 of the said chapter is as follows:

"No person, firm or corporation subject to the provisions of this act shall modify, change, cancel or annul any rate, joint rate, fares, classifications, charge or rental except after thirty days' notice to the Commission and the public, which shall plainly state the changes proposed to be made in the schedule then in force and the time when the changed rates, fares or charges shall go into effect, unless a written protest is made by the public service commission, in which case the proposed rate shall stand suspended until it is determined by the commission whether or not such proposed rate is just or reasonable. Provided, in lieu of the written protest, the commission may enter an order prohibiting such person, firm or corporation from putting such proposed new rate into effect pending the hearing and final decision of the matter and the proposed changes shall be shown by printing new schedules, or shall be plainly indicated upon the schedules in force at the time, and kept open to public inspection; provided, however that the commission, may, in its discretion, and for good cause shown, allow changes upon less time than the notice herein specified, or may modify the requirements of this section in respect to publishing, posting and filing of tariffs,

either by particular instructions or by general order."

"Whenever there shall be filed with the commission any schedule stating a change in the rates, fares, or charges, or joint rates, fares or charges, or stating a new individual or joint rate, fare or charge or joint classisfication or any new individual or joint regulation or practice affecting any fare, rate or charge the commission shall have, and it is hereby given authority, either upon complaint or upon its own initiative without complaint, at once, and, if it so orders, without answer or other form of pleading by the interested parties, but upon reasonable notice to enter upon a hearing concerning the propriety of such rate, fare, charge, classification, regulation or practice; and pending such hearing and the decision thereon the commission, upon filing with such schedule and delivering to the carrier or carriers or public service corporation affected thereby, a statement in writing of its reasons for such suspension, may suspend the operation of such schedule and defer the use of such rate, fare, charge, classification, regulation or practice, but not for a longer period than one hundred and twenty days beyond the time when such rate, fare, charge, classification, regulation or practice would otherwise go into effect; and after full hearing, whether completed before or after the rate, charge, fare, classification, regulation or practice goes into effect, the commission may make such order in reference to such rate, fare, charge, classification, regulation or practice as would be proper in a proceeding initiated after the rate, fare, charge, classification, regulation or practice had become effective; provided, that if any such hearing cannot be conducted within the period of suspension, as above stated, the commission may in its discretion extend the time of suspension for a further period, not exceeding six

months. At any hearing involving a rate sought to be increased or involving the change of any fare, charge, classification, regulation or practice, after the passage of this act, the burden of proof to show that the increased rate, or proposed increased rate or the proposed change of fare, charge, classification, regulation or practice is just and reasonable shall be upon the public service corporation making application for such change. When in any case pending before the commission all evidence shall have been taken, and the hearing completed, the commission shall within three months render a decision in such case."

Section 16 of the said chapter, above referred to, is set out in the original brief filed herein, but for convenience of the court, is herein again quoted and is as follows:

"Any party feeling aggrieved by the entry of a final order by the commission, affecting him or it, may present his or its petition in writing to the supreme court of appeals, or to a judge thereof in vacation, within thirty days after the entry of such order, praying for the suspension of such final order. The applicant shall deliver a copy of such petition to the secretary of the commission before presenting the same to the court, or the judge. The court or judge shall fix a time for the hearing on the application, but such hearing shall not be held sooner than five days, unless by agreement of the parties, after its presentation, and notice of the time and place of such hearing shall be forthwith delivered to the secretary of the commission, so that the commission may be represented at such hearing by one or more of its members or by counsel. If the court or the judge after such hearing be of the opinion that a suspending order should issue, the court or the judge may require bond, upon such

conditions and in such penalty, and impose such terms and conditions upon the petitioner as are just and reasonable. The hearing of the matter shall take precedence over all other matters before the court except the correction of assessments. For such hearing the commission shall file with the clerk of said court all papers, documents, evidence and records or certified copies thereof as were before the commission at the hearing or investigation resulting in the entry of the order from which the petitioner appeals. The commission shall file with the court before the day fixed for the final hearing a written statement of its reasons for the entry of such order and after arguments by counsel the court shall decide the matter in controversy as may seem to be just and right."

Section 27 of the said chapter provides that any person or public service corporation who shall violate any of the orders or findings of the commission shall be guilty of contempt and the commission shall have the same power to punish therefor as is now conferred on the circuit court, with the right of appeal in all cases to the supreme court, and Section 28 of the said chapter provides penalties for non-compliance with requirements of the commission, which penalties are fixed at a sum of not less than one hundred nor more than five hundred dollars for each offense. This section further provides that each day during which any person or corporation shall fail to comply with any order or direction of the commission, or to perform any duty enjoined by this act, shall constitute a separate and distinct violation of such order or direction of this act, as the case may be.

Plaintiff in Error, having exhausted the remedies provided by the Code of West Virginia to secure a fair and just valuation of its property, used and useful in the service of the public, and having received an adjudication by the highest court of the State of West Virginia, in which a hearing in this matter could be had, filed its petition for a writ of error before the Supreme Court of the United States on the 17th day of January, 1922, praying for a writ of error to the judgment of the Supreme Court of Appeals of West Virginia entered on the 14th day of December, 1921. The writ of error so prayed for by Plaintiff in Error was allowed by the Chief Justice of this court on the said 17th day of January, 1922. Thereafter and within the time prescribed by law, on the 6th day of March, 1922, Plaintiff submitted to this court its petition for a writ of certiorari, which petition was denied by the court on the 20th day of March, 1922.

The statement made in the brief of counsel for Defendant in Error to the effect that "the most that can be claimed is that the commission, acting under lawful authority in reaching the conclusion from a disputed state of facts, found and fixed the value of Plaintiff's property for rate making purposes at an amount less than some other tribunal may have fixed and determined from a like state of facts," is not sustained by the record. The conclusion reached by the commission was not reached upon a disputed state of facts, but is contrary to the facts established by the evidence, and is not supported by

the evidence of any witnesses testifying in the case. The opinion of the commission was not based upon the evidence of any witnesses that the value of the plant and property of the Plaintiff, at the time of the investigation as to value, was $460,000.00, for the reason that the evidence of all of the witnesses testifying places the value of the plant and property of the Plaintiff in Error, as of the date of the investigation, at the sum of at least $840,000.00, and the opinion of the commission was reached upon the evidence as to the value of the plant and property of the Plaintiff as of December 31, 1915, as to such of Plaintiff's plant and property as was in use at that date, plus the depreciated value of additions made since that time. The value of the additions, extensions and betterments made to the plant of the Plaintiff since the 31st day of December, 1915, for which Plaintiff in Error received credit in its valuation, amounts to the sum of $88,905.00, after deducting depreciation. The chief errors complained of are that the order of the commission affirmed by the Supreme Court of Appeals of West Virginia fixes the value of the plant and property of the Plaintiff for rate making purposes as of a period ante-dating the time at which the investigation as to value was made, and that by reason of the construction given Section 16, Chapter 15-O of Barnes' Code of West Virginia, 1918, Plaintiff is deprived of its property without due process of law and is denied the equal protection of the law contrary to the provisions of the Federal Constitution.

II

PROPOSITIONS RELIED ON TO SUSTAIN THE JURISDICTION OF THE COURT UPON THE WRIT OF ERROR ALLOWED HEREIN.

1

The order of the Public Service Commission of West Virginia, complained of here and in the court below, which was upheld by the Supreme Court of Appeals of West Virginia in its order and judgment entered on the 14th day of December, 1921, is legislative in its nature and is a state law within the meaning of the Federal Constitution and the laws of Congress regulating the appellate jurisdiction of the Federal Supreme Court over state courts.

Lake Erie & Western Railroad Company vs. State Public Utilities Commission, 249 U. S. 422.

Williams vs. Bruffy, 249 L. Ed. 716.

New Orleans Water Works Company vs. Louisiana Sugar Refining Company, 125 U. S. 31 L. Ed. 607, and cases cited in Lake Erie & Western Railroad Company vs. State Public Utilities Commission, supra.

The writ of error herein is attacked for the alleged reason that no such federal question is presented by the record in this case as brings it within the jurisdiction conferred by Section 237 of the Judicial Code, defining the jurisdiction of this court upon writ of error to the final judgment of a highest state court.

Certainly no contention is made by Plaintiff in Error that any treaty, statute or authority exercised under the United States was drawn in question in the proceedings in the court below, but it is contended that the validity of a statute or an authority exercised under the State of West Virginia was drawn in question on the ground of their being repugnant to the Constitution, treaties or laws of the United States, and the decision of the Supreme Court of Appeals of West Virginia was in favor of the validity of the statute and authority so questioned. The opinion of the Supreme Court of Appeals of West Virginia does declare valid the order of the Public Service Commission of the State of West Virginia, fixing the value of the plant and property of the Plaintiff for rate making purposes, and in declaring this order of the Public Service Commission valid, it declares that a legislative act exercised under the authority of a state is valid when the validity of that act is adequately challenged by the Plaintiff in Error.

The utterances of this court on this question are so clear and conclusive that no argument is deemed necessary in support of the proposition that an order of the Public Service Commission of West Virginia, ratified and approved by the Supreme Court of Appeals of the State of West Virginia is a state law within the meaning of the constitution of the United States and the statutes regulating the jurisdiction of the Supreme Court. In the case of Lake Erie & Western Railroad Company vs. State Public Utilities Commission, supra, the order of the State Public Utilities Commission requiring the res-

toration of a side track, which had been removed, was declared to be a law within the regulations of congress fixing the jurisdiction of this court. The order in that case was challenged as being contrary to the Fourteenth Amendment, and the order of the Public Service Commission in the instant case is challenged as being in conflict with and repugnant to the same amendment. In that case the court says:

> "Such an order, being legislative in its nature, and made by an instrumentality of the state, is a state law within the meaning of the Constitution of the United States and the laws of Congress regulating our jurisdiction. Grand Trunk Western R. Co. vs. Railroad Commission, 221 U. S. 400, 203, 55 L. Ed. 786; Ross vs. Oregon, 227 U. S. 150, 162, 163, 57 L. Ed. 458; Home Teleph. & Teleg. Co. vs. Los Angeles, 227 U.S. 278, 295, 296, 57 L. Ed. 510, 518, 33 Sup. Ct. Rep. 312; Atlantic Coast Line R. Co. vs. Goldsboro, 232 U. S. 548, 58 L. Ed. 721, 725; Wadley Southern R. Co. vs. Georgia, 235 U. S. 651, 660, 661, 59 L. Ed. 405, 411; Arkadelphia Mill Co. vs. St. Louis Southwestern R. Co. 249 U. S. 134, ante, 517, P. U. R. 1919C, 710, 39 Sup. Ct. Rep. 237."

This opinion is sustained by a long line of decisions in this court, among which are Williams vs. Bruffy, 96 U. S. 24 L. Ed. 716, in which case Mr. Justice Field, delivering the opinion of the court says:

> "Any enactment, from whatever source originating, to which a State gives the force of law is a statute of the State, within the meaning of the clause cited relating to the jurisdiction of this court. It would be a narrow construction to limit the term to such enactments as have gone through various

> stages of consideration by the Legislature. There may be many Acts authorized by the Constitution of a State, or by the convention that framed it, which have not been submitted to the consideration of its Legislature, yet have all the efficacy of laws. By the only authority which can be recognized as having any legal existence, that is the State of Virginia, this Act of the unauthorized confederation was enforced as a law of the Commonwealth. Its validity was drawn in question on the ground that it was repugnant to the Constitution of the United States; and the decision of the court below was in favor of its validity."

Another decision of this court in point on this question is the case of New Orleans Water Works Company vs. Louisiana Sugar Refining Company, supra, in which case the above quotation from Williams vs. Bruffy is set out.

In the case of Prentis vs. Atlantic Coast Line Company, 211 U. S. 53 L. Ed. 151, the court says:

> "Legislation, on the other hand, looks to the future and changes existing conditions by making a new rule to be applied thereafter to one or some parts of those subject to its power. The establishment of a rate is the making of a rule for the future and that is an act legislative, not judicial in kind, as seems to be fully recognized by the Supreme Court of Appeals."

This was a case involving passenger rates as fixed by the Virginia State Corporation Commission, which Commission is similar in character to the Public Service Commission of the State of West Virginia. In the case of Ohio Valley Water Works Company vs. Ben Avon Borough, 64 L. Ed. 908, in

speaking of an order similar to the order herein involved, the court says:

> "The order here involved prescribes a complete schedule of maximum future rates and is legislative in character."

Counsel for Defendant in Error, in his brief in support of the motion to dismiss the writ of error herein awarded, cites certain cases from this court and relies on them in support of his motion. The cases cited by Defendant in Error are clearly distinquishable from the present case. The first case cited by him is Zucht vs. King, 67 L. Ed. 28. The validity of a city ordinance providing that no child or other person should attend the public school or other place of education without having first presented a certificate of vaccination, was drawn in question by objections properly taken, but the ordinance was valid and no federal question of substantial character was presented. The only charge in that case was that there had been an unconstitutional exercise of authority under an ordinance which is valid, and the constitutional question presented was not, at the time of granting the writ, substantial in character. However, the court says in dismissing the writ of error granted in that case that "a city ordinance is a law of the state within the meaning of Section 237 of the Judicial Code, as amended, which provides a review by a writ of error where the validity of a law is sustained by the highest court of the state in which a decision in the suit could be had." The question presented in this case is not similar to that in Zucht vs. King, but the order of the Commission, which under the holding of this

court, is a legislative enactement of West Virginia, is challenged because it is contrary to and in violation of the Federal Constitution.

The next case cited by counsel for Defendant in Error is Stadelman vs. Miner, 246 U. S. 544. The facts in this case are also dissimilar to the facts presented by the case now under discussion, and arose upon a challenge to the power of the state court to proceed to a decision in a case involving title to land, and the validity of no statute of the state or authority exercised under the state was drawn in question. Counsel for Defendant in Error also cites Philadelphia Reading Coal & Iron Company vs. Gilbert, 245 U. S. 162. All that was drawn in question by the proceedings below in that case was the validity of the service upon defendant and the power of the court consistently with the first section of the Fourteenth Amendment to proceed upon that service to a hearing and determination of the case.

Ireland vs. Woods, 246 U. S. 326, is also cited by counsel for Defendant in Error. This case arose out of dispute over the facts upon which an authority under a state statute was exercised and did not present such a question as is reviewable in this court upon a writ of error.

There is no dispute upon the facts in the instant case, nor does the question depend upon the determination of a disputed state of facts. The order of the Public Service Commission complained of by Plaintiff in Error and affirmed and ratified by the Supreme Court of Appeals of the State of West Virginia, is in violation of and contrary to the provisions

of the Federal Constitution. The order and judgment of the Public Service Commission of West Virginia, taken alone and without reference to any of the facts set out in the transcript of the record is plainly erroneous and invalid. It is true that in all of the cases cited by Counsel for Defendant in Error the writ of error awarded is dismissed, yet an examination and analysis of the opinion of the court in each of the cases so cited by him sustains the jurisdiction of the court under the writ of error awarded herein. No other conclusion can be reached upon the premises above stated, namely, that the order of the Public Service Commission of the State of West Virginia is a legislative act, and when that act is approved by the Supreme Court of the State, (no other method or manner of review of the finding of the Public Service Commission being provided by statute), that act becomes a law of the state within the contemplation of the Federal Constitution.

We are not confined to the decisions of this court for support of this proposition, but we find that the Supreme Court of Appeals of West Virginia, in a long and uninterrupted line of decisions has held that the orders of the Public Service Commission are legislative in character, and the court has further held that these orders are not subject to judicial review except so far, and in so far only as may be necessary to determine whether such orders are void on constitutional grounds.

In Gas Company vs. Public Service Commission, 73 W. Va., 578, Miller, President, in writing the opinion of the court, says:

"It is furthermore argued that the order of the

> Commission is a law subject to the same constitutional inhibition as an act of the legislature. Citing Grand Trunk Western Railway Co. v. Railroad Commission, 221 U. S. 400, and Raymond v. Chicago Union Traction Co., 207 U. S. 20. Granted; but if so, is such an order reviewable by a court in any other than some judicial proceeding directly attacking its constitutionality? In the absence of constitutional authority we can not say that it is."

In the case of Randall Gas Company vs. Star Glass Company, 78 W. Va., 252, the court says:

> "The power of the Commission to alter rates, charges and tolls for public service, is delegated legislative power, and the procedure in the exercise thereof is also legislative in character."

Even had this court not passed upon this question, the decisions of the Supreme Court of Appeals of West Virginia so construing the orders of the Public Service Commission of the State of West Virginia would be binding upon this court. As it is said in the case of Quong Ham Wah Company vs. Industrial Association, 255 U. S. 445:

> "Construction of a State statute by the highest Court of that State must be accepted by the Federal Supreme Court when testing the validity of the statute on a writ of error to the State Court."

2.

The validity of a state statute under the Federal Constitution having been adequately challenged in the state courts, the case may be brought up to the Federal Supreme Court by writ of error, and certio-

rari will be denied.

Kansas City S. R. Co. vs. Road Improvement Dist. No. 6, 256 U. S. 65 L. Ed. 1151.

Section 237 of the Judicial Code, as amended by Acts of September 6, 1916, Ch. 484, 39 Stat. L. 726.

Lake Erie & Western Railroad Company vs. State Public Utilities Commission, 63 L. Ed. 685.

3.

Section 16 of Chapter 15-O of Barnes' Code, 1918, West Virginia, as interpreted by the Supreme Court of Appeals of West Virginia withholds from that court power to determine the question of confiscation according to its own independent judgment when the action of the Public Service Commission comes to be considered on appeal and denies to plaintiff due process of law in violation of and contrary to the provisions of the Federal Constitution and the case is properly brought to the Federal Supreme Court by writ or error.

Ohio Valley Water Works Company vs. Ben Avon Borough, 64 L. Ed. 908.

Not only the validity of the order of the Public Service Commission of the State of West Virginia is challenged in this proceeding, but the validity of Section 16, Chapter 15-O of Barnes' Code, 1918 of West Virginia, as construed and interpreted by the Supreme Court of Appeals of West Virginia is also challenged in that it denies to plaintiff due process

of law. This court has laid down the doctrine in the case last above cited, that under the Constitution of the United States, Plaintiff is entitled to an independent judicial investigation upon the question of confiscation and to a determination by the court of the question of confiscation according to its own independent judgment when the act of the State Utility Commission comes to be considered on appeal. The chapter and section of the Code of West Virginia, above mentioned, as construed by the Supreme Court of Appeals of West Virginia, denies to Plaintiff this right guaranteed to it by the Constitution. Not only the decision of the court in the instant case sustains this proposition, but an examination of the opinions of the Supreme Court of Appeals of West Virginia, in construing this statute, leads to the inevitable conclusion that the jurisdiction of the court, as ruled by the West Virginia court, stopped short of what must plainly be intrusted to some court in order that there may be due process of law.

In the case of United Fuel Gas Company vs. Public Service Commission, 73 W. Va., 581, the court, in discussing the extent of the jurisdiction granted under the Code to review orders of the Public Service Commission, says:

> "But we cannot construe the statute as intended to give us the power and authority to substitute our judgment for that of the Commission, in a matter purely legislative or administrative."

The court says further:

> "Is it to be presumed then that the legislature intended to invest in this court jurisdiction on review

by original or other process to subsitute its judgment for that of the Commission? We cannot so hold. The court might, perhaps differ from the Commission on the same state of facts, acting with its limited knowledge of the subject, as to what would be right and just in a particular case, but would that justify suspension or nullification of the order of the Commission?"

The statute ought not to be so construed.

The court in the same case further says that the order of the Commission is a law subject to the same constitutional inhibition as an act of the legislature.

The validity of the Sixteenth Section of Chapter 15-O of the West Virginia Code was attacked in assignment of errors Nos. 19 and 21 in the petition for a writ of error filed herein on page 1389 of the transcript of the record. As it is said in the case of Ohio Valley Water Works Company, supra, if the owner claims confiscation of his property will result by virtue of an order of the Public Service Commission, which is legislative in character, the State must provide a fair opportunity for submitting that issue to a judicial tribunal for determination upon its own independent judgment as to both law and fact. Numerous decisions of the Supreme Court of Appeals of the State of West Virginia are to the effect that "findings of fact by the Public Service Commission, based upon evidence to support them, will not be reviewed by this court."

Coal & Coke Company vs. Public Service Com-

mission, 84 W. Va. 678, and cases therein cited.

Plainly in the present case Plaintiff in Error has not had a proper opportunity for adequate judicial hearing as to confiscation, and this question alone would be sufficient to sustain the jurisdiction of the court under the writ of error awarded.

CONCLUSION.

On the 6th day of March, 1922, Plaintiff in Error presented its petition for a writ of certiorari to this court within the time prescribed by law. This petition was denied on the 20th day of March, 1922, by the court. In the light of the above cited cases, the action of the court in refusing the writ of certiorari was plainly right and this case is properly brought into this court by writ of error under the provisions of Section 237 of the Judicial Code, and the motion filed herein by the Defendant in Error should be overruled.

Counsel for Defendant in Error argues in support of his motion to dismiss that the validity of no state statute is challenged as contrary to the provisions of the Federal Constitution. This argument is based upon the erroneous assumption that a statute within the meaning of the Judicial Code defining the jurisdiction of this court upon writ of error must be such an enactment as has gone through the various stages of consideration by the Legislature. This construction of the enactment is entirely too

narrow and is not sustained by the numerous cases in which this court has passed upon the question. The order of the Public Service Commission complained of is a statute of the State within the meaning of the Judicial Code and the case is properly brought here by writ of error.

Respectfully submitted,

A. G. FOX,
JOSEPH M. SANDERS,
SANDERS, CROCKETT & FOX,

Attorneys for Bluefield Water Works & Improvement Company, Plaintiff in Error.

The decree of the state court is

Affirmed.

BLUEFIELD WATER WORKS & IMPROVEMENT COMPANY *v.* PUBLIC SERVICE COMMISSION OF THE STATE OF WEST VIRGINIA ET AL.

ERROR TO THE SUPREME COURT OF APPEALS OF THE STATE OF WEST VIRGINIA.

No. 256. Argued January 22, 1923.—Decided June 11, 1923.

1. A judgment of the highest court of a State which upholds an order of a state commission fixing the rates of a public utility company over the objection that the rates are confiscatory and the order hence violative of the Fourteenth Amendment, is reviewable here, on the constitutional question, by writ of error. P. 683.
2. In estimating the value of the property of a public utility corporation, as a basis for rate regulation, evidence of present reproduction costs, less depreciation, must be given consideration. P. 689. *Southwestern Bell Telephone Co.* v. *Public Service Commission, ante,* 276.
3. A public utility corporation, challenging as confiscatory rates imposed by a state commission, is entitled, under the due process clause of the Fourteenth Amendment, to the independent judgment of the court as to both law and facts. *Id.*
4. Rates which are not sufficient to yield a reasonable return on the value of the property used, at the time it is being used to render the service of the utility to the public, are unjust, unreasonable and confiscatory; and their enforcement deprives the public utility company of its property, in violation of the Fourteenth Amendment. P. 690.
5. A public utility is entitled to such rates as will permit it to earn a return on the value of the property it employs for the convenience of the public equal to that generally being made at the same time, and in the same region of the country, on investments

in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. P. 692.

6. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility, and should be adequate, under efficient and economical management, to maintain its credit, and enable it to raise the money necessary for the proper discharge of its public duties. *Id.*

7. A rate of return may be reasonable at one time, and become too high or too low by changes affecting opportunities for investment, the money market, and business conditions generally. *Id.*

8. In this case, 6% was inadequate to constitute just compensation. P. 695.

89 W. Va. 736, reversed.

ERROR to a judgment of the Supreme Court of Appeals of West Virginia, sustaining an order of a state commission fixing water rates, in a suit brought by the plaintiff in error to set the order aside.

Mr. Alfred G. Fox, with whom *Mr. Joseph M. Sanders* was on the briefs, for plaintiff in error.

Mr. Russell S. Ritz for defendants in error.

The judgment of the Supreme Court of Appeals of West Virginia herein does not declare valid any statute of the State or any authority exercised under the State, which is repugnant to the Constitution, treaties, or laws of the United States.

The most that can be claimed is that the Commission, acting under lawful authority in reaching the conclusion from a disputed state of facts, found and fixed the value of plaintiff's property for rate making purposes at an amount less than some other tribunal may have fixed and determined from a like state of facts. A judgment based upon such a state of facts does not raise such a federal question as gives a right of review from this Court to the highest court of the State by a writ of error.

The Public Service Commission and the Supreme Court of Appeals acted under valid state authority. The authority or law under which these respective tribunals exercised jurisdiction not being repugnant to any federal law, what conclusions they may have reached from a given state of facts which furnishes the basis for the judgment complained of herein, does not present a question subject to be reviewed by writ of error. Such questions can be reviewed only on petition for a writ of certiorari. *Zucht* v. *King*, 260 U. S. 174; *Stadelman* v. *Miner*, 246 U. S. 544; *Philadelphia & Reading Coal Co.* v. *Gilbert*, 245 U. S. 162; *Ireland* v. *Woods*, 246 U. S. 323.

It is not here contended that a public utility is not entitled to a fair return upon the fair and reasonable value of all of its plant and property then used and useful in the public service, but we submit that the fair and reasonable value of a public utility's plant and property is not to be ascertained by adopting only one method of valuation to the exclusion of all other known methods and elements of value. A valuation of a public utility, such as would be fair to the public as well as the utility, should take into consideration the original cost or investment in the utility; the market value of its stocks or bonds, if any; the probable earning capacity of the property; the various rates it has received and the rate it is receiving; the amounts necessary to meet operating expenses; the ability of the utility to adequately perform the public service; the history of the operations of the utility; and perhaps other elements; and after taking all of these into consideration, fix a value that will be fair both to the public and to the utility. *Smyth* v. *Ames*, 169 U. S. 466; *San Diego Land & Town Co.* v. *Jasper*, 189 U. S. 439; *San Diego Land & Town Co.* v. *National City*, 174 U. S. 739; *Knoxville* v. *Knoxville Water Co.*, 212 U. S. 1; *Des Moines Gas Co.* v. *Des Moines*, 238 U. S. 153; *Willcox* v. *Consolidated Gas Co.*, 212 U. S. 19.

If by taking one element or method of value a conclusion is reached which is out of all proportion with a conclusion that may be reached by taking other methods, then that measure or method should be adopted which will, after taking into consideration all of the elements of value, make a fair and reasonable value on the utility's property, used and useful in the public service.

The reproduction theory of public utility valuation has been usually resorted to by the public to safeguard itself against values of public utilities, based upon inflated and watered stock investments, purporting to represent original cost. Practically all, if not all, of the decisions of this Court, in which this theory of valuation was even considered, were cases of this character; and even in them this Court has never held that the reproduction new theory at present prices was an exclusive method by which public utility values are to be determined. *Smyth* v. *Ames, supra;* Whitten, Valuation Public Service Corporations, c. V, p. 82, et seq.; 2 Wyman, Public Service Corporations, c. 32; *Coal & Coke Ry. Co.* v. *Conley,* 67 W. Va. 129; *Minnesota Rate Cases,* 230 U. S. 352.

If determining public utility values for rate-making purposes is to be accomplished by using the reproduction new theory at present prices, to the exclusion of every other element and method of values, then it may well be seen to what uncertain, as well as unfair, consequences it may lead. If the market is abnormally low and a valuation on this theory is made at such a time, without taking into consideration past costs or other elements of value, it would be manifestly unfair to the utility. Likewise, if this theory of valuation is used at a time of abnormally high prices in the market, such as was produced by the World War, and all other methods and elements of values are excluded, then it would be most unfair to the public, who would be expected to pay rates

of return upon such unfair value so reached. *Potomac Electric Power Co.* v. *Public Utilities Comm.*, 276 Fed. 330; *New York Pub. Serv. Comm.* No. 5, P. U. R. 930; *Newton* v. *Consolidated Gas Co.*, 258 U. S. 165.

MR. JUSTICE BUTLER delivered the opinion of the Court.

Plaintiff in error is a corporation furnishing water to the city of Bluefield, West Virginia, and its inhabitants. September 27, 1920, the Public Service Commission of the State being authorized by statute to fix just and reasonable rates, made its order prescribing rates. In accordance with the laws of the State (§ 16, c. 15–0, Code of West Virginia) the company instituted proceedings in the Supreme Court of Appeals to suspend and set aside the order. The petition alleges that the order is repugnant to the Fourteenth Amendment, and deprives the company of its property without just compensation and without due process of law and denies it equal protection of the laws. A final judgment was entered denying the company relief and dismissing its petition. The case is here on writ of error.

1. The city moves to dismiss the writ of error for the reason, as it asserts, that there was not drawn in question the validity of a statute or an authority exercised under the State, on the ground of repugnancy to the Federal Constitution.

The validity of the order prescribing the rates was directly challenged on constitutional grounds, and it was held valid by the highest court of the State. The prescribing of rates is a legislative act. The commission is an instrumentality of the State, exercising delegated powers. Its order is of the same force as would be a like enactment by the legislature. If, as alleged, the prescribed rates are confiscatory, the order is void. Plaintiff in error is entitled to bring the case here on writ of error and to have that question decided by this Court. The motion to dismiss will be denied. See *Oklahoma Natural Gas Co.* v.

Russell, 261 U. S. 290, and cases cited; also *Ohio Valley Water Co.* v. *Ben Avon Borough*, 253 U. S. 287.

2. The commission fixed $460,000 as the amount on which the company is entitled to a return. It found that under existing rates, assuming some increase of business, gross earnings for 1921 would be $80,000 and operating expenses $53,000, leaving $27,000, the equivalent of 5.87 per cent., or 3.87 per cent. after deducting 2 per cent. allowed for depreciation. It held existing rates insufficient to the extent of $10,000. Its order allowed the company to add 16 per cent. to all bills, excepting those for public and private fire protection. The total of the bills so to be increased amounted to $64,000. That is, 80 per cent. of the revenue was authorized to be increased 16 per cent., equal to an increase of 12.8 per cent. on the total,—amounting to $10,240.

As to value. The company claims that the value of the property is greatly in excess of $460,000. Reference to the evidence is necessary. There was submitted to the commission evidence of value which it summarized substantially as follows:

a. Estimate by company's engineer on basis of reproduction new, less depreciation, at prewar prices.....	$624,548.00
b. Estimate by company's engineer on basis of reproduction new, less depreciation, at 1920 prices.....	$1,194,663.00
c. Testimony of company's engineer fixing present fair value for rate making purposes.....	$900,000.00
d. Estimate by commission's engineer on basis of reproduction new, less depreciation at 1915 prices, plus additions since December 31, 1915, at actual cost, excluding Bluefield Valley Water Works, water rights and going value	$397,964.38

e. Report of commission's statistician showing investment cost less depreciation	$365,445.13
f. Commission's valuation, as fixed in Case No. 368 ($360,000) plus gross additions to capital since made ($92,520.53)	$452,520.53

It was shown that the prices prevailing in 1920 were nearly double those in 1915 and prewar time. The company did not claim value as high as its estimate of cost of construction in 1920. Its valuation engineer testified that in his opinion the value of the property was $900,000,—a figure between the cost of construction in 1920, less depreciation, and the cost of construction in 1915 and before the war, less depreciation.

The commission's application of the evidence may be stated briefly as follows:

As to "a", supra. The commission deducted $204,000 from the estimate (details printed in the margin),[1] leaving approximately $421,000 which it contrasted with the estimate of its own engineer, $397,964.38 (see *"a", supra*). It found that there should be included $25,000 for the Bluefield Valley Water Works plant in Virginia, 10 per cent. for going value, and $10,000 for working capital. If these be added to $421,000 there results $500,600. This may be compared with the commission's final figure, $460,000.

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[1] Difference in depreciation allowed $49,000
Preliminary organization and development cost 14,500
Bluefield Valley Water Works Plant 25,000
Water rights 50,000
Excess overhead costs 39,000
Paving over mains 28,500

[*sic*] $204,000

As to "b" and "c", supra. These were given no weight by the commission in arriving at its final figure, $460,000. It said:

"Applicant's plant was originally constructed more than twenty years ago, and has been added to from time to time as the progress and development of the community required. For this reason, it would be unfair to its consumers to use as a basis for present fair value the abnormal prices prevailing during the recent war period, but when, as in this case, a part of the plant has been constructed or added to during that period, in fairness to the applicant, consideration must be given to the cost of such expenditures made to meet the demands of the public."

As to "d", supra. The commission taking $400,000 (round figures) added $25,000 for Bluefield Valley Water Works plant in Virginia, 10 per cent. for going value, and $10,000 for working capital, making $477,500. This may be compared with its final figure, $460,000.

As to "e", supra. The commission on the report of its statistician found gross investment to be $500,402.53. Its engineer applying the straight line method found 19 per cent. depreciation. It applied 81 per cent. to gross investment and added 10 per cent. for going value and $10,000 for working capital, producing $455,500.[2] This may be compared with its final figure, $460,000.

As to "f", supra. It is necessary briefly to explain how this figure, $452,520.53, was arrived at. Case No. 368 was a proceeding initiated by the application of the company for higher rates, April 24, 1915. The commission made a valuation as of January 1, 1915. There were presented two estimates of reproduction cost less depreciation, one by a valuation engineer engaged by the com-

[2] As to "e". $365,445.13 represents investment cost less depreciation. The gross investment was found to be $500,402.53, indicating a deduction on account of depreciation of $134,957.40, about 27 per cent. as against 19 per cent. found by the commission's engineer.

pany and the other by a valuation engineer engaged by the city, both "using the same method." An inventory made by the company's engineer was accepted as correct by the city and by the commission. The method "was that generally employed by courts and commissions in arriving at the value of public utility properties under this method", and in both estimates "five year average unit prices" were applied. The estimate of the company's engineer was $540,000 and of the city's engineer, $392,000. The principal differences as given by the commission are shown in the margin.[3] The commission disregarded both estimates and arrived at $360,000. It held that the best basis of valuation was the net investment, i. e., the total cost of the property less depreciation. It said: "The books of the company show a total gross investment since its organization, of $407,882.00, and that there has been charged off for depreciation from year to year the total sum of $83,445.00, leaving a net investment of $324,427.00. . . . From an examination of the books . . . it appears that the records of the company have been remarkably well kept and preserved. It, therefore, seems that when a plant is developed under these conditions the net investment which of course means the total gross investment less depreciation is the very best basis of valuation for rate making purposes and that the other methods above referred to should

	Company engineer.	City engineer.
[3] 1. Preliminary cost	$14,455	$1,000
2. Water rights	50,000	Nothing.
3. Cutting pavements over mains	27,744	233
4. Pipe lines from gravity springs	22,072	15,442
5. Laying cast iron street mains	19,252	15,212
6. Reproducing Ada Springs	18,558	13,027
7. Superintendence and Engineering	20,515	13,621
8. General contingent cost	16,415	5,448
	$189,011	$63,983

be used only when it is impossible to arrive at the true investment. Therefore, after making due allowance for capital necessary for the conduct of the business and considering the plant as a going concern, it is the opinion of the commission that the fair value for the purpose of determining reasonable and just rates in this case of the property of the applicant company, used by it in the public service of supplying water to the City of Bluefield and its citizens, is the sum of $360,000.00, which sum is hereby fixed and determined by the Commission to be the fair present value for the said purpose of determining the reasonable and just rates in this case."

In its report in No. 368, the commission did not indicate the amounts respectively allowed for going value or working capital. If 10 per cent. be added for the former, and $10,000 for the latter (as fixed by the commission in the present case) there is produced $366,870, to be compared with $360,000, found by the commission in its valuation as of January 1, 1915. To this it added $92,520.53 expended since, producing $452,520.53. This may be compared with its final figure, $460,000.

The State Supreme Court of Appeals holds that the valuing of the property of a public utility corporation and prescribing rates are purely legislative acts not subject to judicial review except in so far as may be necessary to determine whether such rates are void on constitutional or other grounds; and that findings of fact by the commission based on evidence to support them will not be reviewed by the court. *Bluefield* v. *Water Works Co.*, 81 W. Va. 201, 204; *Coal and Coke Co.* v. *Public Service Commission*, 84 W. Va. 662, 678; *Charleston* v. *Public Service Commission*, 86 W. Va. 536.

In this case (80 W. Va. 736) it said (p. 738):

"From the written opinion of the commission we find that it ascertained the value of the petitioner's property for rate making [then quoting the commission] 'after

maturely and carefully considering the various methods presented for the ascertainment of fair value and giving such weight as seems proper to every element involved and all the facts and circumstances disclosed by the record.'"

The record clearly shows that the commission in arriving at its final figure did not accord proper, if any, weight to the greatly enhanced costs of construction in 1920 over those prevailing about 1915 and before the war, as established by uncontradicted evidence, and the company's detailed estimated cost of reproduction new, less depreciation, at 1920 prices, appears to have been wholly disregarded. This was erroneous. *Missouri ex rel. Southwestern Bell Telephone Co. v. Public Service Commission*, *ante*, 276. Plaintiff in error is entitled under the due process clause of the Fourteenth Amendment to the independent judgment of the court as to both law and facts. *Ohio Valley Water Co. v. Ben Avon Borough*, 253 U. S. 287, 289, and cases cited.

We quote further from the court's opinion (pp. 739, 740):

"In our opinion the commission was justified by the law and by the facts in finding as a basis for rate making the sum of $460,000.00. In our case of *Coal & Coke Ry. Co. v. Conley*, 67 W. Va. 129, it is said: 'It seems to be generally held that, in the absence of peculiar and extraordinary conditions, such as a more costly plant than the public service of the community requires, or the erection of a plant at an actual, though extravagant, cost, or the purchase of one at an exorbitant or inflated price, the actual amount of money invested is to be taken as the basis, and upon this a return must be allowed equivalent to that which is ordinarily received in the locality in which the business is done, upon capital invested in similar enterprises. In addition to this, consideration must be given to the nature of the investment, a higher rate

being regarded as justified by the risk incident to a hazardous investment.'

"That the original cost considered in connection with the history and growth of the utility and the value of the services rendered constitute the principal elements to be considered in connection with rate making, seems to be supported by nearly all the authorities."

The question in the case is whether the rates prescribed in the commission's order are confiscatory and therefore beyond legislative power. Rates which are not sufficient to yield a reasonable return on the value of the property used at the time it is being used to render the service are unjust, unreasonable and confiscatory, and their enforcement deprives the public utility company of its property in violation of the Fourteenth Amendment. This is so well settled by numerous decisions of this Court that citation of the cases is scarcely necessary. "What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience." *Smyth* v. *Ames*, (1898) 169 U. S. 466, 547.

"There must be a fair return upon the reasonable value of the property at the time it is being used for the public. . . .

"And we concur with the court below in holding that the value of the property is to be determined as of the time when the inquiry is made regarding the rates. If the property, which legally enters into the consideration of the question of rates, has increased in value since it was acquired, the company is entitled to the benefit of such increase." *Willcox* v. *Consolidated Gas Co.*, (1909) 212 U. S. 19, 41, 52.

"The ascertainment of that value is not controlled by artificial rules. It is not a matter of formulas, but there must be a reasonable judgment having its basis in a proper consideration of all relevant facts." *Minnesota Rate Cases*, (1913) 230 U. S. 352, 434.

"And in order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses, are all matters for consideration, and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property." *Smyth* v. *Ames, supra,* 546, 547.

". . . . The making of a just return for the use of the property involves the recognition of its fair value if it be more than its cost. The property is held in private ownership and it is that property, and not the original cost of it, of which the owner may not be deprived without due process of law." *Minnesota Rate Cases, supra,* 454.

In *Missouri ex rel. Southwestern Bell Telephone Co.* v. *Public Service Commission, supra,* applying the principles of the cases above cited and others, this Court said:

"Obviously, the Commission undertook to value the property without according any weight to the greatly enhanced costs of material, labor, supplies, etc., over those prevailing in 1913, 1914 and 1916. As matter of common knowledge, these increases were large. Competent witnesses estimated them as 45 to 50 per centum . . . It is impossible to ascertain what will amount to a fair return upon properties devoted to public service without giving consideration to the cost of labor, supplies, etc., at the time the investigation is made. An honest and intelligent forecast of probable future values made upon a view of all the relevant circumstances, is essential. If the highly important element of present costs is wholly disregarded such a forecast becomes impossible. Estimates for to-morrow cannot ignore prices of today."

It is clear that the court also failed to give proper consideration to the higher cost of construction in 1920 over that in 1915 and before the war, and failed to give weight to cost of reproduction less depreciation on the basis of 1920 prices, or to the testimony of the company's valuation engineer, based on present and past costs of construction, that the property in his opinion was worth $900,000. The final figure, $460,000, was arrived at substantially on the basis of actual cost less depreciation plus ten per cent. for going value, and $10,000 for working capital. This resulted in a valuation considerably and materially less than would have been reached by a fair and just consideration of all the facts. The valuation cannot be sustained. Other objections to the valuation need not be considered.

3. *Rate of return.* The state commission found that the company's net annual income should be approximately $37,000, in order to enable it to earn 8 per cent. for return and depreciation upon the value of its property as fixed by it. Deducting 2 per cent. for depreciation, there remains 6 per cent. on $460,000, amounting to $27,600 for return. This was approved by the state court.

The company contends that the rate of return is too low and confiscatory. What annual rate will constitute just compensation depends upon many circumstances and must be determined by the exercise of a fair and enlightened judgment, having regard to all relevant facts. A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in

highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties. A rate of return may be reasonable at one time and become too high or too low by changes affecting opportunities for investment, the money market and business conditions generally.

In 1909, this Court, in *Willcox v. Consolidated Gas Co.*, 212 U. S. 19, 48–50, held that the question whether a rate yields such a return as not to be confiscatory depends upon circumstances, locality and risk, and that no proper rate can be established for all cases; and that, under the circumstances of that case, 6 per cent. was a fair return on the value of the property employed in supplying gas to the City of New York, and that a rate yielding that return was not confiscatory. In that case the investment was held to be safe, returns certain and risk reduced almost to a minimum—as nearly a safe and secure investment as could be imagined in regard to any private manufacturing enterprise.

In 1912, in *Cedar Rapids Gas Light Co. v. Cedar Rapids*, 223 U. S. 655, 670, this Court declined to reverse the state court where the value of the plant considerably exceeded its cost, and the estimated return was over 6 per cent.

In 1915, in *Des Moines Gas Co. v. Des Moines*, 238 U. S. 153, 172, this Court declined to reverse the United States District Court in refusing an injunction upon the conclusion reached that a return of 6 per cent. per annum upon the value would not be confiscatory.

In 1919, this Court in *Lincoln Gas Co. v. Lincoln*, 250 U. S. 256, 268, declined on the facts of that case to approve a finding that no rate yielding as much as 6 per

cent. on the invested capital could be regarded as confiscatory. Speaking for the Court, Mr. Justice Pitney said:

"It is a matter of common knowledge that, owing principally to the world war, the costs of labor and supplies of every kind have greatly advanced since the ordinance was adopted, and largely since this cause was last heard in the court below. And it is equally well known that annual returns upon capital and enterprise the world over have materially increased, so that what would have been a proper rate of return for capital invested in gas plants and similar public utilities a few years ago furnishes no safe criterion for the present or for the future."

In 1921, in *Brush Electric Co.* v. *Galveston*, the United States District Court held 8 per cent. a fair rate of return.[4]

In January, 1923, in *Minneapolis* v. *Rand*, the Circuit Court of Appeals of the Eighth Circuit (285 Fed. 818, 830) sustained, as against the attack of the city on the ground that it was excessive, 7½ per cent., found by a special master and approved by the District Court as a fair and reasonable return on the capital investment—the value of the property.

Investors take into account the result of past operations, especially in recent years, when determining the terms upon which they will invest in such an undertaking. Low, uncertain or irregular income makes for low prices for the securities of the utility and higher rates of interest to be demanded by investors. The fact that the company may not insist as a matter of constitutional right that past losses be made up by rates to be applied in the present and future tends to weaken credit, and the fact that the utility is protected against being compelled to serve for confiscatory rates tends to support it. In

[4] This case was affirmed by this Court, June 4, 1923, *ante*, 443.

this case the record shows that the rate of return has been low through a long period up to the time of the inquiry by the commission here involved. For example, the average rate of return on the total cost of the property from 1895 to 1915, inclusive, was less than 5 per cent.; from 1911 to 1915, inclusive, about 4.4 per cent., without allowance for depreciation. In 1919 the net operating income was approximately $24,700, leaving $15,500, approximately, or 3.4 per cent. on $460,000 fixed by the commission, after deducting 2 per cent. for depreciation. In 1920, the net operating income was approximately $25,465, leaving $16,265 for return, after allowing for depreciation. Under the facts and circumstances indicated by the record, we think that a rate of return of 6 per cent. upon the value of the property is substantially too low to constitute just compensation for the use of the property employed to render the service.

The judgment of the Supreme Court of Appeals of West Virginia is reversed.

MR. JUSTICE BRANDEIS concurs in the judgment of reversal for the reasons stated by him in *Missouri ex rel. Southwestern Bell Telephone Co.* v. *Public Service Commission of Missouri, supra.*